Basis of Preparation

Endeavour Energy
Response to AER Economic Benchmarking RIN

Submission date: 30 April 2014

CONTENTS

Purpose

The RIN requires Endeavour Energy to prepare a Basis of Preparation. By this, the AER mean that for every variable in the Templates, Endeavour Energy must explain the basis upon which we prepared information to populate the input cells. The Basis of Preparation must be a separate document (or documents) that Endeavour Energy submits with its completed Templates. The AER will publish Endeavour Energy's Basis of Preparation along with the Templates.

This document is Endeavour Energy's Basis of Preparation in relation to Unaudited Data required to be submitted to the AER by 3 March 2014.

A revised Basis of Preparation will be prepared in relation to the Audited Information required to be submitted on 30 April 2014.

AER's instructions

The AER requires the Basis of Preparation to follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how Endeavour Energy has complied with the requirements of the Notice.

To do this, the AER recommended that Endeavour Energy structures its Basis of Preparation with a separate section to match each of the worksheets titled '2 Revenue' to '8 Operating environment' in the Templates.

The AER noted that Endeavour Energy may consider structuring these sections with subheadings for each subject matter table in each worksheet. For example, for the worksheet '5 Operational data', Endeavour Energy would explain its Basis of Preparation for the Variables under the heading '5.1 Energy delivery', '5.2 Customer numbers' and '5.3 System demand'. Endeavour Energy's Basis of Preparation has followed this recommended structure.

Endeavour Energy must include in its Basis of Preparation, any other information Endeavour Energy prepares in accordance with the requirements of the Notice (including this document). For example, if Endeavour Energy chooses to disaggregate its RAB using its own approach in addition to the AER's standard approach, Endeavour Energy must explain this in its Basis of Preparation.

The AER has set out what must be in the Basis of Preparation. This is set out in Table 1 below:

1	Demonstrate how the information provided is consistent with the requirements of the Notice.
2	Explain the source from which Endeavour Energy obtained the information provided.
3	Explain the methodology Endeavour Energy applied to provide the required information, including any assumptions Endeavour Energy made.
4	In circumstances where Endeavour Energy cannot provide input for a Variable using Actual Information, and therefore must use an estimate, explain: (i) why an estimate was required, including why it was not possible for Endeavour Energy to use Actual Information; (ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Endeavour Energy's best estimate, given the information sought in the Notice.

5	For Variables that contain Financial Information (Actual or Estimated) the relevant Basis of Preparation must explain if accounting policies adopted by Endeavour Energy have materially changed during any of the Regulatory Years covered by the Notice: (i) the nature of the change; and (ii) the impact of the change on the information provided in response to the Notice. Endeavour Energy may provide additional detail beyond the minimum requirements if Endeavour Energy considers it may assist a user to gain an understanding of the information presented in the Templates. In relation to providing an audit opinion or making an attestation report on the Templates presented by Endeavour Energy, an auditor or assurance practitioner shall provide an opinion or attest by reference to Endeavour Energy's Basis of Preparation.

Structure of this document

The document is structured as follows:

- We outline our general approach to developing our response to the RIN. We identify key systems used to provide data and note issues relating to data quality.

- We set out our response to worksheets 2 to 8, in accordance with the AER's instructions. We note that Worksheet 1 requires no input material.

General approach

In this section, we identify our general approach to collecting and preparing information.

A key concern of Endeavour Energy is that the AER may use information which is of a poor quality to make regulatory determinations. We note that this issue has been raised with the AER in consultations relating to this notice.

Systems used to provide data

Where methodologies or assumptions were required to complete the files other than the mere application of the AER approved CAM to the general purpose financial statements Endeavour Energy has included commentary by way of the "note" function within Microsoft Excel to provide guidance to the AER.

Below is a listing of Endeavour Energy's systems that, to a greater or lesser extent, were directly related to or supported the development of the information contained in the RIN templates:

- Cognos – Business reporting system managing database information such as organisation policies and procedures;
- Ellipse – financial management system including: accounts payable; payroll; asset and equipment registers and financial reporting functions. The Ellipse system also caters for defect management (condition based) and also routine maintenance (planned). The equipment register is also linked to various other supporting systems such as field inspections and the Geographical Information System (GIS);
- TM1 – Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory accounts allocations. It is a cube based technology which allows rules to be created between cubes and within cubes;
- eFrams – Endeavour Energy uses this system in relation to IT Allocation Drivers. The system enables access to all telecommunication billing, inventory management/asset register and reporting;
- Remedy - Endeavour Energy uses this system in relation to IT Allocation Drivers. This is a BMC tool used by CGI for asset management, definitive software library, incident management and service request management;
- Autocad - Endeavour Energy uses this system in relation to Property Drivers. This is a program used for computer-aided design and drafting. The program is used to maintain Floor Plans which can be used to summarise occupancy by business unit;
- Banner – Endeavour Energy's customer database and billing system;
- Figtree – Worker's compensation claims management data base. This system is maintained separate (but linked at aggregate levels) to other systems to maintain confidentiality of data as required by legislation;
- Value Development Algorithm (VDA) – Endeavour Energy uses the Value Development Algorithm (VDA) for its high level asset renewal expenditure modelling. The model is populated with specific asset data in order to produce the replacement capital forecast. Data for each asset is allocated into asset categories, which represent major components that make up the network such as poles, transformers, conductor, cable, switchgear etc. Each asset type is assigned an

asset life and a replacement cost. The quantity of assets installed on the network each financial year is also entered, thus generating an age profile of the network assets;

- Visual Risk – Endeavour Energy uses this in house Treasury Management System for improving the productivity of its treasury operations. Visual Risk provides functions such as capturing a facility drawdown; valuing an FX option; and facilitating back office administration and financial reporting. Specifically it was used to prepare the cost of funds schedule;

- System Fault Recording (SFR) – Endeavour Energy uses this Oracle database system for all reliability reporting. The data in this system is accessed using Cognos, with further analysis and processing of data being undertaken using Microsoft Office programs such as Access and Excel;

- SCADA - Endeavour Energy uses this system to monitor and control its network. This system is used to identify and register an event such as a plane strike on the network;

- Outage Management System - Endeavour Energy uses this system to log outages on its network, with the point of contact being from external sources. This system can also be used to identify events where these are externally identified;

- Contact Centre 6 – Endeavour Energy's call centre uses this system to run reports on historical call volume according to skill set (Call Type). The system is also used to assign agents to specific call taking groups based on call type.

Data quality issues

In previous consultations on the RIN, we have raised significant concerns with providing historical data in the form required by the AER.

Approach to our obligations under the NEL

Our view of the NEL is that a DNSP is only obligated to provide information that is available, that is, data which has been historically collected in our systems. In cases, where that information cannot be provided in the form required by the AER from our systems, we would have a reasonable excuse under section 28(5) of the NEL not to comply with that element of the notice. We have strong doubts that a RIN can require a business to prepare information by way of estimate that cannot be reasonably derived from information currently held in its systems.

Our understanding of the term 'prepare' relates to a power the AER has to compel a DNSP to collect information in the form required by the AER for future periods (for example, by developing new systems) rather than to manipulate historical data in potentially inaccurate ways. We suggest that the AER should give more careful consideration to whether it has appropriately informed itself of the distinction under section 28D of the NEL between the ability of a RIN to require existing information to be provided and the ability to require information to be prepared, maintained and kept on a going forward basis.

Despite this Endeavour Energy has prepared and included the estimated data on an unaudited basis.

Recognition by AER that 'best estimates' are not robust

The AER has acknowledged that if we are compelled to provide best estimates then there is potential for the data to lack robustness.

Reliability of applying data to economic benchmarking

We consider that the application of economic benchmarking to guide regulatory decision making would result in error, leading to outcomes that are detrimental to the long term interests of customers. Our view is based on the following reasons:

- As noted in the sections on data quality, there is recognition by the AER that data quality from best estimates will not be of a robust quality, and may not pass audit and reviews. This document identifies where material has been developed from best estimates and the confidence we have in that data. We note in this respect that models such as Total Factor Productivity (TFP) are based on the interaction of multi-variables. If a data series is inaccurate, it can significantly alter the findings of the model and lead to misleading conclusions.

- We are not convinced that economic benchmarking tools such as TFP can be used to infer relative efficiency of DNSPs over time. We consider that the models cannot adequately normalise for differences between DNSPs, and do not provide meaningful assessment of the apparent differences in productivity levels. For example, TFP will show that a firm that replaces ageing assets has declining levels of capital productivity, as the model would show higher prices for capital while maintaining existing service levels. In our view this would be driven by the age of the asset base which is likely to vary between DNSPs.

- We consider that economic benchmarking models such as TFP do not provide the AER with guidance on how to target its review of expenditure forecasts, as the information provided is at too high a level to identify potential areas of efficiency. The models and data collected will not provide any guidance on the underlying drivers of apparent productivity, and therefore does not provide useful analysis on which areas to review in a DNSP's capex and opex forecasts.

Worksheet 2 – Revenue

2.1 Revenue grouping by chargeable quantity and 2.2 Revenue grouping by customer type of class

Compliance with requirements of the notice

The data presented in tables 2.1 and 2.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- Total revenue reported in tables 2.1 and 2.2 are equal and reconcile to total Direct Control Services revenue reported in previous audited Regulatory Accounts / RINs. Specifically, for 2005/06 to 2009/10, total Standard Control Services revenue reconciles to revenue from Prescribed Services as reported in previous audited Regulatory Accounts. For 2010/11 to 2012/13, total Standard Control Services revenue reconciles to the addition of distribution, private power line and customer installation inspections, miscellaneous and monopoly services and emergency recoverable works revenue (together totalling Prescribed Services revenue), as reported in previous audited RINs. In addition, total Alternative Control Services revenue reconciles to revenue from maintenance of public lighting infrastructure as reported in previous audited Regulatory Accounts / RINs;

- Revenue from unmetered supplies is identical in tables 2.1 and 2.2;

- Revenue presented in table 2.1 reflects revenue earned by chargeable quantity in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. Revenue categories DREV0101 to DREV0109 in table 2.1 reflect Distribution-Use-Of-System ('DUoS') revenue earned from customers by chargeable quantity. "Revenue from Other Sources" (DREV0113) reflects all non-DUoS Prescribed Services revenue reported in previous audited Regulatory Accounts / RINs (i.e. private power line and customer installation inspections, miscellaneous and monopoly services and emergency recoverable works revenue); and

- Revenue presented in table 2.2 reflects revenue earned by customer type or class in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. "Revenue from Other Customers" (DREV0206) reflects all non-DUoS Prescribed Services revenue from table 2.1, whereas all other categories in table 2.2 reflect DUoS revenue earned from customers by customer type or class.

Source of information

DUoS revenue information (DREV0101 to DREV0109 in table 2.1 and DREV0201 to DREV0205 in table 2.2) used to populate the tables contained in section 2 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited RINs. It is a cube based technology which allows rules to be created between cubes and within cubes. More specifically, DUoS revenue information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store, analyse and report data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end results and is also used extensively for budgeting and forecasting revenue related items.

Non-DUoS revenue information (DREV0110 to DREV0113 in table 2.1 and DREV0206 in table 2.2) was extracted directly from previous audited Regulatory Accounts / RINs.

Methodology and assumptions

The following table sets out the methodology applied to obtain required data for each of the tables in section 2.

Table	Methodology	Assumptions
2.1 & 2.2 DUoS Revenue	1. DUoS revenue data was extracted from the TM1 NUoS cube for each financial year in the Initial Period by network tariff and by revenue type (i.e. NAC revenue, demand revenue and peak, shoulder, off-peak and Non TOU energy revenue). 2. Total DUoS revenue derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 3. Total DUoS revenue from TM1 was reconciled to DUoS revenue reported in previous audited Regulatory Accounts / RINs. Material variances (greater than 1%) were investigated and resolved and adjustments made where required. The variances between DUoS revenue in TM1 and DUoS revenue as reported in previous audited Regulatory Accounts / RINs was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 2.1 and 'Revenue from residential Customers' (DREV0201) in table 2.2 to ensure total DUoS revenue reconciled to previous audited Regulatory Accounts / RINs (except where adjustments were required). 4. DUoS revenue line items in table 2.1 (DREV0101 to DREV0109) and table 2.2 (DREV0201 to DREV0205) were populated from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. *Note: given TM1 NUoS cube data is available from 2005/06 onwards and represents previously reported figures, all information provided for DUoS revenue consists of Actual Information (no Estimated Information required).*	The variances between DUoS revenue in TM1 and DUoS revenue as reported in previous audited Regulatory Accounts / RINs was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 2.1 and 'Revenue from residential Customers' (DREV0201) in table 2.2 to ensure total DUoS revenue reconciled to previous audited Regulatory Accounts / RINs (except where adjustments were required).
2.1 & 2.2 Non-DUoS Revenue	1. All revenue related line items disclosed in previous audited Regulatory Accounts / RINs were summarised and non-DUoS Prescribed Services revenue sources identified as public lighting maintenance charges, private power line and customer installation inspections, miscellaneous & monopoly services and emergency recoverable works.	None.

Table	Methodology	Assumptions
	2. For the purposes of table 2.1, Endeavour Energy did not recover revenue from metering charges or connection charges during the Initial Period. Revenue from public lighting charges was identified from previous audited Regulatory Accounts / RINs and reported as Alternative Control Services revenue. Revenue from all other sources (i.e. private power line and customer installation inspections, miscellaneous & monopoly services and emergency recoverable works) was summed and reported in 'Revenue from other sources' (DREV0113) in Standard Control Services. 3. For the purposes of table 2.2, 'Revenue from other customers' (DREV0206) represents the sum of all non-NUoS revenue (DREV0110 to DREV0113) from table 2.1. *Note: given the non-DUoS revenue data represents previously reported figures, all information provided for non-DUoS revenue consists of Actual Information (no Estimated Information required).*	

Use of estimated information

While Endeavour Energy made an assumption in order to ensure total DUoS revenue reported in table 2.1 and 2.2 reconciles to previous audited Regulatory Accounts / RINs (as outlined above), it has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in tables 2.1 and 2.2.

Reliability of information

All the information provided represents Actual Information extracted from Endeavour Energy's reporting systems and has been reconciled to reported figures in previous audited Regulatory Accounts / RINs. As a result, the information contained in tables 2.1 and 2.2 is considered to be reliable.

2.3 Revenue (penalties) allowed (deducted) through incentive schemes

Compliance with requirements of the notice

The entries in table 2.3 capture the annual revenue adjustments that have resulted from a performance based incentive scheme. The values reflect the year in which the reward or penalty is applied to revenue, not the year in which they are earned.

Endeavour Energy has included D-Factor allowances under "Other" as annual revenue adjustments are made under this scheme based on Demand Management performed by the business. Non-performance based allowances such as the Demand Management Innovation Allowance Scheme; equity raising costs and debt raising cost allowances are not included in this table.

Source of information

Annual EBSS

Revenue rewards and penalties under the EBSS scheme do not yet apply.

Annual STPIS

Revenue rewards and penalties under the STPIS scheme do not yet apply.

Other - Annual D-Factor

D-Factor revenue allowances have been sourced from annual D-Factor submissions to IPART and the AER.

Year	Source
2007	Annual submission of demand management information by Integral Energy to the Independent Pricing and Regulatory Tribunal (January 2006)
2008	Integral Energy - Report on Demand Management Projects FY 2005/06 (January 2007)
2009	Integral Energy - Report on Demand Management Projects FY 2006/07 (January 2008)
2010	Integral Energy - Report on Demand Management Projects FY 2007/08 (January 2009)
2011	Integral Energy - Report on Demand Management Projects FY 2008/09 (January 2010)
2012	Integral Energy - Report on Demand Management Projects FY 2009/10 (January 2011)
2013	Endeavour Energy - Report on Demand Management Projects 2010/11 (25 January 2012)

D-Factor revenue adjustments apply to standard control services revenue only. There are no D-Factor revenue adjustments for alternate control services.

Methodology and assumptions

D-Factor data is sourced from audited reports as submitted and approved by the relevant regulatory body.

Use of estimated information

Endeavour Energy has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions in table 2.3.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 2.3.

Reliability of information

D-Factor data is sourced from audited annual reports as submitted to the relevant regulatory body.

Worksheet 3 – Opex

3.1 Opex categories

Compliance with requirements of the notice

The data presented in the tables contained in sections 3.1.1 and 3.1.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.1.1 (Current opex categories and cost allocations) and 3.1.2 (Historical opex categories and cost allocations) represents the opex split into Standard Control Services and Alternative Control Services in accordance with the definitions of these services provided in chapter 9.

- The Opex in tables 3.1.1 and 3.1.2 has been prepared for all Regulatory Years in accordance with Endeavour Energy's Cost Allocation Approach and directions within the Annual Reporting Requirements for the most recent completed Regulatory Year (which was 2012/13).

- Table 3.1.1 has been completed as there has been a material change (over the course of the back cast time series) in Endeavour Energy's basis of preparation for its Regulatory Accounting Statements. As a consequence, the opex reported in table 3.1.1 is not consistent with the Opex reported in Table 3.1.2 for the 2005/06 to 2010/11 financial years at a regulatory category level, but does reconcile to the total historical Opex as disclosed in the Regulatory Accounting Statements.

  Since Endeavour Energy completed the 2009 Distribution Determination RIN there have been a range of structural and operational changes across divisions as well as within the network functions.

  As a consequence, Endeavour Energy's activities and sub-activities that are used to identify actual costs by the opex categories contained in the annual RIN were reviewed and updated to ensure that the relationship between internal functions and reported costs is as robust and accurate as possible. This review identified several improvements to the segregation of the standard control operating costs (which were unaffected by this review in aggregate) in the RIN operating cost categories as well as a change in the allocator for direct and indirect overhead costs from a percentage of direct labour to a percentage of direct operating expenditure.

  Consequently, the main driver for Endeavour Energy's basis of preparation change in table 3.1.1 is in the mix of costs being reported at a RIN category level compared to the historical RINs due to the re-allocation of activities and sub-activities to better reflect the reporting costs by the RIN categories. This is also relevant for overhead costs, due to changes in corporate structures which can be directly attributed to the Standard Control Service, but not to an individual RIN category.

- The historical opex in Table 3.1.1 has been categorised and reported in a manner that is consistent with Endeavour Energy's approved Cost Allocation Method and most recent annual reporting RIN activities in the 2012/13 Regulatory Financial Statements.

- All the information disclosed in table 3.1.2 reconciles directly to the total historical Opex for Standard Control Services and Alternative Control Services as disclosed in the Regulatory Financial Statements for each respective year.

Source of information

The information used to populate the tables contained in tables 3.1.1 and 3.1.2 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations. It is a cube based technology which allows rules to be created between cubes and within cubes.

Set out in the table below are the specific cubes used to obtain the required information for tables 3.1.1 and 3.1.2, along with a description in relation to the use of the cubes by Endeavour Energy:

Table	TM1 Cube	Description
3.1.1 and 3.1.2	Reg Accounts cube	The Reg Accounts cube is used by Endeavour Energy to store and report the Opex into the service categories (i.e. Standard Control, Alternate Control and Unregulated categories) at the account code level. It is the primary tool used to allocate opex in accordance with Endeavour Energy's approved Cost Allocation Method.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 3.1.

The information in table 3.1.2 was already prepared and reported in the Annual Financial Statements for each year of the reported periods and the information has been transposed from the final Annual Financial Statements (rather than being re-performed).

Table	Methodology	Assumptions
3.1.1	1. Extract opex data from the TM1 Reg Accounts cube at the account code level for each financial year in the Initial Period. Extract the data as Labour and non-labour line items. 2. Reconcile the total derived at the individual account code level to the total from the TM1 Reg Accounts cube (N Level Org Units) to ensure no account codes have been excluded. 3. Reconcile the total derived at the individual account code level to the total opex reported in previous RINs. 4. Assign a reg accounts classification to the extracted TM1 data. This classification can be a direct network cost, direct network overhead or a corporate overhead cost. A direct network cost is assigned directly to a RIN category (e.g. maintenance & repair, emergency response etc.), direct network overheads are the remaining network operating costs that cannot be allocated directly to a RIN category and allocated on a pro rata basis, based on the proportions of the direct allocation and corporate overheads	Immaterial variances (less than 0.2%) exist between TM1 Reg Accounts cube data and the information contained in previous audited RINs. These variances were added back to all RIN categories post allocation based on the proportion of costs in each of the categories to ensure total opex reported for the Initial Period is consistent with previous audited RINs.

Table	Methodology	Assumptions
	(and shared business unit costs) are allocated to the network business on a pro rata basis, based on the proportions of the sum of direct network costs and direct network overhead costs. 5. Allocate the direct network overhead costs to those costs classified as direct network costs on a pro rata basis, based on the proportions of the direct allocation of network costs to each service category. 6. Allocate the corporate overhead costs to the costs classified as direct network costs (as the network overhead costs were already allocated at step 5) on a pro rata basis, based on the proportions of the direct allocation of network costs (inclusive of network overhead costs) to each service category. 7. Populate table 3.1.1 with the results of the above steps in accordance with the RIN instructions & definitions. *Note: given TM1 Reg Accounts cube data is available from 2005/06 onwards and represents previously reported figures, all information provided for this table consists of actual information (no estimated information required).*	
3.1.2	1. Extract opex data from the TM1 Reg Accounts cube at the account code level for each financial year in the Initial Period. Extract the data as Labour and non-labour line items. 2. Reconcile the total derived at the individual account code level to the total from the TM1 Reg Accounts cube (N Level Org Units) to ensure no account codes have been excluded. 3. Reconcile the total derived at the individual account code level to the total opex reported in previous RINs. 4. Populate table 3.1.1 from the detailed TM1 Reg Accounts cube data in accordance with the RIN instructions & definitions. *Note: given TM1 Reg Accounts cube data is available from 2005/06 onwards and represents previously reported figures, all information provided for this table consists of actual information (no estimated information required).*	• This information was already prepared and reported in the final Annual Financial Statements for each year of the Annual Financial Statements, so the information was transposed from the final Annual Financial Statements (rather than the process being re-performed to produce the Benchmark RIN). • Energy Savings Fund has been reported as a part of Opex in the 2005/06 and 2009/10 financial years since this was a requirement of Annual Financial Statements for these years respectively. However, it is noted that this was not required to be separately disclosed for the other financial years.

Use of estimated information

While Endeavour Energy made an assumption in order to ensure total standard control and alternate control opex reported in tables 3.1.1 and 3.1.2 reconciles to previous audited RINs (as outlined above), it has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in tables 3.1.1 or 3.1.2.

Reliability of information

All the information provided represents actual information extracted from Endeavour Energy's reporting systems and reconciled to reported figures in previous audited RINs. As a result the information contained in tables 3.1.1 and 3.1.2 is considered to be reliable.

3.2 Opex consistency

Compliance with requirements of the notice

The data presented in the tables contained in sections 3.2.1 and 3.2.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.2.1 (Opex consistency – current cost allocation approach) and 3.2.2 (Opex consistency – historical cost allocation approach) represents the opex from tables 3.1.1 and 3.1.2 split into Standard Control Services and Alternative Control Services in accordance with the definitions of these services provided in chapter 9.

- The Opex in tables 3.2.1 and 3.2.2 has been prepared for all Regulatory Years in accordance with Endeavour Energy's Cost Allocation Approach and directions within the Annual Reporting Requirements for the most recent completed Regulatory Year (which was 2012/13).

- Table 3.2.1 has been completed as there has been a material change (over the course of the back cast time series) in Endeavour Energy's basis of preparation for its Regulatory Accounting Statements. As a consequence, the opex reported in table 3.2.1 is not consistent with the Opex reported in Table 3.2.2 for the 2005/06 to 2010/11 financial years at a regulatory category level, but does reconcile to the total historical Standard Control Services and Alternative Control Services Opex reported as disclosed in the Regulatory Accounting Statements.

  Since Endeavour Energy completed the 2009 Distribution Determination RIN there have been a range of structural and operational changes across divisions as well as within the network functions.

  As a consequence, Endeavour Energy's activities and sub-activities that are used to identify actual costs by the opex categories contained in the annual RIN were reviewed and updated in 2011/12 to ensure that the relationship between internal functions and reported costs are as robust and accurate as possible. This review identified several improvements to the segregation of the standard control operating costs (which were unaffected by this review in aggregate) in the RIN operating cost categories as well as a change in the allocator for direct and indirect overhead costs from a percentage of direct labour to a percentage of direct operating expenditure.

  Consequently, the main driver for Endeavour Energy's changes in table 3.2.1 compared to table 3.1.1 for the 2005/06 to 2010/11 financial years is in the mix of costs being reported at a RIN category level due to the re-allocation of activities and sub-activities to better reflect the reporting costs by the RIN categories. This is also relevant for overhead costs, due to changes in corporate structures which can be directly attributed to the Standard Control Service, but not to an individual RIN category.

- The historical opex in Table 3.2.1 has been categorised and reported in a manner that is consistent with Endeavour Energy's most recent annual reporting RIN activities in the Regulatory Financial Statements, which was the 2012/13 financial year.

- All the information disclosed in table 3.2.2 reconciles directly to the total historical Opex for Standard Control Services and Alternative Control Services as disclosed in the Regulatory Financial Statements for each respective year.

Source of information

The information used to populate the tables contained in table 3.2.2 and 3.2.2 (where relevant) was originally extracted directly from TM1 (an OLAP tool) and included in the annual RIN Finance

Statements for each year respectively. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations. It is a cube based technology which allows rules to be created between cubes and within cubes.

Set out in the table below are the specific cubes used to obtain the required information for tables 3.2.1 and 3.2.2, along with a description in relation to the use of the cubes by Endeavour Energy:

Table	TM1 Cube	Description
3.2.1 and 3.2.2	Reg Accounts cube	The Reg Accounts cube is used by Endeavour Energy to store and report the Opex into the service categories (i.e. Standard Control, Alternate Control and Unregulated categories) at the account code level. It is the primary tool used to allocate opex in accordance with Endeavour Energy's approved Cost Allocation Method.

Methodology and assumptions

The following table sets out the methodology applied to originally calculate the required data for each of the tables in sections 3.2.1 and 3.2.2 (where relevant) using the TM1 tool. With regard to Table 3.2.1 note that this information was already prepared and reported in the final Annual Financial Statements for each year of the Annual Financial Statements so the information was transposed from the final Annual Financial Statements (rather than being re-performed).

Table	Methodology	Assumptions
3.2.1	• Opex for network services – represents total Standard Control Opex from table 3.1.1 less the opex for metering. • Opex for metering – represents meter reading RIN category from table 3.1.1. • Opex for connection services – not applicable for Endeavour Energy. • Opex for public lighting– represents total Alternate Control Opex from table 3.1.1. • Opex for amounts payable for easement levies - not applicable for Endeavour Energy. • Opex for transmission connection point planning - not applicable for Endeavour Energy.	Nil – direct link to table 3.1.1.
3.2.2	• Opex for network services – represents total Standard Control Opex from table 3.1.2 less the opex for metering. • Opex for metering – represents meter reading RIN category from table 3.1.2.	Nil – direct link to table 3.1.2.

Table	Methodology	Assumptions
	• Opex for connection services – not applicable for Endeavour Energy. • Opex for public lighting– represents total Alternate Control Opex from table 3.1.2. • Opex for amounts payable for easement levies - not applicable for Endeavour Energy. • Opex for transmission connection point planning - not applicable for Endeavour Energy.	

Use of estimated information

While Endeavour Energy made an assumption in order to ensure total standard control and alternate control opex reported in tables 3.2.1 and 3.2.2 reconciles to previous audited RINs (as outlined above), it has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in tables 3.2.1 or 3.2.2.

Reliability of information

All the information provided represents actual information extracted from Endeavour Energy's reporting systems and reconciled to reported figures in previous audited RINs. As a result the information contained in tables 3.1.1 and 3.1.2 is considered to be reliable.

3.3 Provisions

Compliance with requirements of the notice

The data presented in table 3.3 Provisions is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 3.3 Provisions covers all regulatory periods with financial information on provisions for Standard Control Services in accordance with the cost allocation approach and the Regulatory Accounting Statements that were in effect for the relevant Regulatory year.
- The financial information provided is for each individual provision identified as follows:
  - A Employee Benefits
  - B Self Insurance
  - C Defined Benefits Superannuation
  - D Other
  - E Dividends
- Each individual provision has been specified by name and the variable codes for the line items have been separately identified as required.

Source of information

The source information used to populate table 3.3 Provisions was extracted from the RIN for the relevant years, Balance Sheet and Capital working papers for the RIN and the Movement in Provisions schedule used as part of the Annual Statutory Financial Statements.

The information is located in G/CFO/NSW Treasury/Regulatory Financial Statements/Year/ (Balance Sheet and Capital) tabs.

Methodology and assumptions

The methodology used to populate table 3.3 Provisions followed the same methodology in determining the closing balance of each provision in the RIN each year. The Movement in Provisions schedule details the opening balance, increases to provisions, amounts used (paid), unused amounts reversed and closing balance for each provision. The same methodology used in determining the closing balance was used to determine the percentage allocation of increases to provisions, amounts used (paid) and unused amounts reversed for each provision.

Between 2006 – 2010 the RIN was only separated between Regulated Retail, Regulated Distribution Network and Other. A further dissection was required to separate Regulated Distribution Network between Standard Control Services, Alternate Control Services and Other Unregulated based on the relevant allocation drivers for those particular years. Employee Benefits (A), Self-Insurance (B) and Defined Benefits Superannuation (C) utilised the labour driver, Other (D) utilised a combination of labour, IT, opex and direct allocation drivers, and Dividends (E) utilised the Profit/(Loss) After Tax percentage from the profit & loss split of Regulated Distribution Network into Standard Control Services, Alternate Control Services and Other Excluded Services.

Also between 2006 – 2010 no roll forward of closing balances from the previous year was required. The closing balance was based on the appropriate percentage allocation of the closing balance sheet. The current practice was adopted from 2011 onwards. Unfortunately for the 2011 & 2012 RIN, the opening balance was calculated by utilising the current year allocation driver, which was different from the closing balance from the previous year. All opening balance adjustments between 2006 and 2012 have been included in “increases to the provision”. The 2013 RIN was calculated utilising the 2012 closing balance rolled forward.

Any impacts due to changes in discount rates have been included in “Increases to the provision” for Employee Benefits and Defined Benefits Superannuation. This information is unavailable for all the regulatory years.

Defined Benefits Superannuation “amounts used during the period” has been amended to reflect the additional contributions made to the defined benefits fund to reduce the deficit which had not been previously included in the RIN. This has been offset by a corresponding adjustment to the “Increases to the provision”. The additional contributions were only incurred in the 2010, 2012 and 2013 financial years. There was also an error in the 2013 audited accounts where the liabilities paid and increase/decrease in provisions were incorrectly stated. The correct amounts have been included in the RIN accounts. The carrying amount at the end of each period remains unchanged and agrees with the final RIN lodged for each year.

During 2010 there was a reallocation of $592.97k between Employee Entitlement provisions and Self Insurance provision which differed from the audited accounts. The reallocation related to a workers compensation discrepancy. The reallocation was required to ensure consistency year on year.

During the 2010 year the NSW Government announced it had entered into a contract for the sale of the Retail business. Based on this all Regulated Retail information was included in Other Unregulated.

Use of estimated information

Endeavour Energy has used estimated information when determining a profit & loss split of Regulated Distribution Network into Standard Control Services, Alternate Control Services and Other Excluded Services for the periods 2006 – 2010. The metering type 1 – 4 depreciation and capital expenditure for 2006 and 2007 was estimated. The estimate was based on the average percentage for the 2008 – 2010 years for excluded services. The estimated values were immaterial compared to the overall Regulated Distribution Network. This was required to allow an allocation of depreciation and borrowing costs for those years to determine the Standard Control Services. The profit & loss was required to allocate the Dividend provision based on profit after tax into Standard Control Services. Dividend are paid in the following year, therefore the liabilities paid from provision will always equate to the opening balance.

Included in Other in 2009 was a capitalisation threshold provision which was paid and reversed during 2009. The closing balance of the capitalisation threshold as at June 2009 was zero. The allocation driver used to determine the paid and reversed amounts were the same used in 2008. Any impact of a change in allocation driver between 2008 and 2009 was immaterial.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.3.

Reliability of information

All information provided represents actual information extracted from RIN work papers which reconcile to reported figures in previous audited RIN’s, with the exception of the immaterial estimates of type 1 – 4 meters depreciation and capital expenditure in calculating the allocation of the Dividend provision for 2006 & 2007.

3.4 Opex for high voltage customers

Compliance with requirements of the notice

Estimates have been made for Opex that Endeavour Energy would have incurred had it owned the distribution transformers owned by High Voltage Customers (HVCs). The Opex estimates consist of substation inspections, network switching and response to faults and emergencies.

Source of information

Data that was used to produce the estimates include: Ellipse, GIS Network Statistics, and Past Strategic Asset Management Plan (SAMP) Financial Spreadsheets.

Methodology and assumptions

To estimate the substation inspection opex requirements:

- Maintenance costs are assumed to be driven by the number of substations to be maintained and substation size is not a material cost driver.
- Historical quantities of HVC's were obtained from Network Statistics.
- A percentage was applied to the historical quantities. This percentage was calculated as the current number of HVC's in Ellipse to the current number of HVC's in GIS. The percentage application is required as some HVC's in GIS are represented by more than one substation.
- A query was run to see how many HVC's were currently already being inspected. A percentage was calculated and applied to determine the number of additional inspections would be required.
- A labour component of 2 man-hours was applied to each substation for an inspection. This labour rate was obtained from the Finance unit rate model derived from actual maintenance expenditure over the past three years.
- Labour rates used in past Network Maintenance Implementation Plan (NMIP)/Strategic Network Maintenance Plans (SNMP's) were used to calculate the opex requirement. As only labour rates were available only back to 2010, a linear regression was carried out to estimate labour rates for years 2006 to 2009.
- The estimated total opex is the sum of inspection maintenance costs, an allowance for fault & emergency costs and allowance for switching costs.

To estimate Fault & Emergency (F&E) opex:

- A percentage was calculated based on past opex actuals to determine a percentage of Distribution F&E to Distribution maintenance.
- No opex actuals were available for 2006 and 2007; hence the same proportion of maintenance expenditure for 2008 was used to derive the fault and emergency expenditure for these years.
- The percentage calculated was then applied to the opex estimate derived for substation inspections to determine estimates for Fault & Emergencies.

To estimate Network Switching opex:

- A percentage was calculated based on past opex actuals to determine a percentage of Switching to the total routine and fault & emergency maintenance.
- This percentage was applied to the F&E estimates to determine estimates for switching as this is the only opex component for which switching is required.
- No opex actuals were available for 2006 and 2007; hence the same proportion of maintenance expenditure for 2008 was used to derive the switching expenditure for these years.

Use of estimated information

Endeavour Energy has used estimated information for the quantities of historical HVC's due to no historical asset quantity data capturing from Ellipse.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.4.

Reliability of information

All information provided represents estimated information as the data for table 3.4 is not readily available or captured.

Worksheet 4 – RAB

4.1 RAB values

Compliance with requirements of the notice

Currently, Endeavour Energy does not have any Alternative Control Services that include a RAB as part of the current pricing arrangements. There is a residual recovery amount for pre-2009 Public Lighting assets; however this value is not maintained in a RAB as defined in normal use. Consequently, the RAB amounts for network services are those as per the standard control services and the RAB values for alternative control services are nil.

Source of information

Table 4.1 is sourced from the Roll Forward Model (RFM) as provided to Endeavour Energy by the AER as part of the final 2009 distribution determinations for the financial years up to and including 2008/09.

For the remaining years the data is sourced from the RFM submitted by Endeavour Energy as party of our transitional regulatory proposal.

Methodology and assumptions

This table was completed using reference data provided by the AER when finalising the 2009 NSW Distribution determination, the RFM attachment to Endeavour's Transitional Regulatory Proposal in January 2014, and cross referenced for accuracy against the relevant annual reporting instruments.

The instructions and description of this table seek to replicate the annual RAB roll forward processes, in particular noting the capex amount as recognised in the RFM.

In this instance it was necessary to ensure that the reported annual transactions for capex, depreciation and disposals replicated the RFM noting that this requires adjustments where the data series being requested straddles regulatory periods as the RFM has a particular approach to addressing forecast capex in the last year of a regulatory period that subsequently impacts the calculations for the following 5 years.

As set out in box 7 in section 4.1, Endeavour Energy has ensured that the mapping of the financial data was reconciled to the RFM values used by the AER in the 2009 distribution determination for the year up to and including 2008/09. This has included the application of forecast data for 2008/09 in respect to capex recognised in the RAB in that year as consequential impacts on the calculation of the regulatory depreciation as required by the use of forecast data within the RFM.

In addition it was necessary to make adjustments to the capex figure where the recognised capex in the RFM differed from the actual cash transactions in a particular year.

Consequently, the amounts for 2009/10 also reflect the equity raising cost allowance as incorporated into the 2009 distribution determination, but which are not reflected in the annual regulatory information submitted for that year.

Leasehold improvements have been classified as other assets with long lives noting that the closest proxy for these investments is non-system buildings for which such leases and consequential improvements would most likely relate.

The CPI assumed in the RFM submitted as part of the TRP applies CPI as used for annual pricing purposes throughout the forecast regulatory period to ensure a matching between revenue adjustments for annual pricing purposes and the underlying revenue adjustments used for setting the revenue targets.

Use of estimated information

No variables were assumed in the completion of this table for standard control services. All information was drawn from either past AER decisions, annual reporting submitted to the AER that had been previously subject to audit, or information being prepared for submission to the AER as part of the forthcoming regulatory proposal..

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 4.1.

Reliability of information

In light of the sources of information used to complete this table it is considered reliable for the purposes of confirming the RAB and changes in the RAB over time in accordance with the prevailing obligations and regulatory tools.

4.2 Asset value roll forward

Compliance with requirements of the notice

Endeavour Energy has applied the standard approach as set out in section 4.1.1 of the RIN Instructions and definitions. Endeavour Energy developed a map of the fixed asset register assets to the RIN RAB categories as set out in Chapter 9, Definitions.

The mapping of the financial information allowed for a direct allocation of each fixed asset register asset class to a single RIN RAB asset category allowing Endeavour to adopt this approach.

As set out in box 7 in section 4.1, Endeavour Energy has ensured that the mapping of the financial data was reconciled to the RFM values used by the AER in the 2009 distribution determination for the year up to and including 2008/09. This has included the application of forecast data for 2008/09 in respect to capex recognised in the RAB in that year as consequential impacts on the calculation of the regulatory depreciation as required by the use of forecast data within the RFM.

Consistent with the requirements of box 7 in section 4.1, where the AER is yet to make a determination on the RAB roll-forward for the years 2009/10 onwards Endeavour has reconciled the RAB values as per the RFM submitted to the AER with Endeavour Energy's Transitional Regulatory Proposal.

Source of information

Information has been sourced from:

- Endeavour Energy's fixed asset register;
- The RFM provided to Endeavour by the AER as part of the final 2009 NSW Distribution Determination; and
- The RFM provided to the AER by Endeavour as part of the 2014 Transitional Regulatory Proposal.

Methodology and assumptions

The methodology applied by Endeavour Energy is to allocate RAB RFM values as per the two RFMs used as source information to the fixed asset register information for each reporting year and then match these values to the relevant RIN RAB categories.

It is recognised that the RFM approach aggregates underlying asset class information and applies average assumptions regarding depreciation profiles as well as including adjustments that are not accounted for in Endeavour Energy's financial systems such as annual inflation escalation.

Consequently it is readily accepted that carrying amounts within Endeavour Energy's financial systems and transactions such as annual depreciation will not align due to regulatory adjustments as well as the compositional differences that arise through aggregation.

Consequently, Endeavour Energy's methodology seeks to better reflect the relative underlying service potential and the relative residual financial value of the RAB by apportioning actual RFM outcomes to actual fixed asset register information in line with the RIN RAB asset classes.

The linking of values between financial data and RFM data is essential to ensure that regulatory adjustments for transactional data such as capex and disposals accounts for RFM adjustments such as the escalation for the timing of recognising capex and disposals in the RFM by applying $WACC^{0.5}$.

This process is set out below.

Opening value = ((Sum of fixed asset register carrying amount for asset classes relevant to RAB asset class * Standard Control service allocation percentage) / Total Fixed Asset Register Carrying Amount Allocated to Standard Control Services) * RAB opening value

Inflation addition = (Opening value / Total RAB opening value) x Total RAB inflation addition

Straight line depreciation = (Sum of fixed asset register straight line depreciation for asset classes relevant to RAB asset class / Total fixed asset register straight line depreciation) x Total RAB straight line depreciation

Regulatory depreciation = Straight line depreciation – inflation addition (note that this is applied to all asset classes other than easements for which the templates do not provide for an economic depreciation line item. Consequently there is a difference between table 4.1 and 4.2 to the value of inflation on the easements RAB values).

Actual Additions = Sum of fixed asset register capex for asset classes relevant to RAB asset class / Total RAB capex

Disposals = Sum of fixed asset register disposals for asset classes relevant to RAB asset class / Total RAB disposals

Closing Value = Opening value - Regulatory depreciation + Actual Additions – Disposals

The metering amounts contained in the network services elements of table 4.2, were calculated from the proportion of network and metering services capital investments contained within the metering asset class. The network services percentage was then applied to the resultant standard control services values determined as above.

Use of estimated information

Endeavour Energy has not used any estimated information to calculate the values in the standard control services elements of table 4.2, all sources of information are actual financial or actual determination amounts.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact on the data in table 4.2.

Reliability of information

With the exception of the metering asset class, all information is sourced from RFM calculations and actual financial data. Consequently, Endeavour submits that the information is reliable as all amounts ultimately aggregate as a standard control services level to the RAB values contained in the relevant Roll Forward Models.

4.3 Total disaggregated RAB asset values

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to calculate the values in this table as being the average of the opening and closing RAB asset class values from Table 4.2 above. The values in this table have been linked to the opening and closing RAB roll forward amounts as calculated in table 4.2.

Source of information

The information for table 4.3 was sourced from Benchmarking RIN table 4.2.

Methodology and assumptions

The calculation for each item in table 4.3 is as per below:

(Opening Value for RAB class 1 + Closing Value for RAB class 1) / 2

Use of estimated information

Endeavour Energy has not used estimated information specifically for table 4.3. All information sourced from table 4.2 is dependent upon actual financial information and application of the RAB Framework.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data in table 4.3.

Reliability of information

Table 4.3 is directly linked to table 4.2 and hence the reliability of the information in table 4.3 is directly equivalent to that as per table 4.2 above.

4.4 Asset lives

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to apply a weighted average life calculation to determine the standard and remaining lives. These lives will represent the proportional contribution of the fixed asset register asset classes, their actual standard and remaining lives and actual financial values.

Source of information

The data for table 4.4 was sourced from actual fixed asset register information for each year of reporting.

Methodology and assumptions

To determine the **standard** life for each asset class required by the RIN, Endeavour calculated the Weighted Average Standard life using the underlying fixed asset register asset class information.

Algebraically this approach can be described as

$$\text{Service life of new assets} = \sum_{j=1}^{n} \text{OCC}_j \times \text{Life}_j \Big/ \sum_{j=1}^{n} \text{OCC}_j$$

To determine the **remaining** life for each asset class required by the RIN, Endeavour calculated the Weighted Average remaining life using the underlying fixed asset register asset class information.

Algebraically this approach can be described as

$$\text{Residual life of assets} = \left(\sum_{j=1}^{n} \text{WDV}_j \Big/ \sum_{j=1}^{n} \text{OCC}_j\right) \times \text{Life}_j$$

Where:

n	is the number of individual assets in an AER asset class
OCC_j	is the Opening Capital Cost of individual asset j
WDV_j	is the Written Down Value of individual asset j
$Life_j$	is the standard life of individual asset j
Dep_j	is the Depreciation of individual asset j

It is noted that consistent with our pre-existing accounting policies a periodic revaluation exercise was undertaken in 2010/11 for statutory reporting purposes. The combined impact of both restatement of the original capital cost in line with a replacement cost methodology as well as a cash flow value in use impairment on the residual value was providing step changes in the calculated remaining asset lives, in the order of a 20 year reduction in expected life in some instances. To remedy the impact of these revaluation transactions, the impact on the asset register for the last three years of the reporting period was removed from the underlying data using the journals and work papers that supported the original adjustments. The resultant outcomes are presented without the impact of the periodic revaluation.

It has been assumed that the composition of network services metering assets and standard control services assets are equal and therefore have the same standard and remaining life expectations.

Use of estimated information

No estimated data was used in the calculation of the asset lives. All information used was drawn from actual fixed asset register information.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 4.4.

Reliability of information

The data used in the calculations is all sourced from annual audited accounting information and is therefore considered reliable.

Worksheet 5 – Operational data

5.1 Energy delivery

Compliance with requirements of the notice

The data presented in the tables contained in section 5.1 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 5.1, 5.1.1 and 5.1.4 represents the total electricity transported out of Endeavour Energy's network in the relevant regulatory year (measured in GWh). This is reflective of the energy metered at the customers charging location (i.e. connection point) and reconciles to total energy consumption reported in previous audited Regulatory Accounts / RINs. The figures in these tables represent energy consumption reported for the relevant financial year and therefore include year-end accruals;

- The data presented in table 5.1.1 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. In particular, the peak, shoulder and off-peak periods relate to Endeavour Energy's own charging periods. Energy delivery where time of use is not a determinant is reflective of energy which is measured by an accumulation meter and charged on an accumulation basis;

- The data presented in table 5.1.2 reflects energy input into Endeavour Energy's network as measured at supply points from TransGrid and other DNSPs in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. All energy input into Endeavour Energy's network from TransGrid or other DNSPs is measured as being received in either peak, shoulder or off-peak times and therefore there is nil energy received from TNSP and other DNSPs not included in the above categories;

- The data presented in table 5.1.3 reflects energy input in Endeavour Energy's network by embedded generators, including residential embedded generators. The data is reported in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. It is noted that energy received from residential embedded generators is measured on an accumulation basis and not measured by the time of receipt and therefore energy input from this source is allocated to the 'energy received from embedded generation not included in above categories from residential embedded generation' (DOPED0408) category; and

- The data presented in table 5.1.4 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. This category breakdown is also consistent with the customer types reported in table 5.2.1.

Source of information

The information used to populate the tables contained in section 5.1 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube based technology which allows rules to be created between cubes and within cubes.

Set out in the table below are the specific cubes used to obtain the required information for the tables in section 5.1, along with a description in relation to the use of the cube by Endeavour Energy:

Table	TM1 Cube	Description
5.1, 5.1.1 & 5.1.4	NUoS cube	The NUoS cube is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end revenue results and is also used extensively for budgeting and forecasting revenue related items.
5.1.2 & 5.1.3	TUoS Reconciliation cube	The TUoS Reconciliation cube is primarily used by Endeavour Energy to reconcile TransGrid's monthly TUoS invoice with internal system import data for the month. In performing this task, the TUoS Reconciliation cube contains information regarding system imports and peak demand by Bulk Supply Point ('BSP') and for each embedded generator (including residential solar system imports). The TUoS Reconciliation cube is also used to calculate and report on total system imports for the month which is used in the monthly NUoS accrual process.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 5.1.

Table	Methodology	Assumptions
5.1, 5.1.1 & 5.1.4	1. Extract energy consumption data from the TM1 NUoS cube at the network tariff level for each financial year in the Initial Period and by time period of consumption (i.e. Peak, Shoulder, Off-peak and Non TOU). 2. Reconcile the total derived at the individual network tariff level to the total from the TM1 NUoS cube to ensure no network tariffs have been excluded. 3. Reconcile the total derived at the individual network tariff level to the total energy consumption reported in previous audited Regulatory Accounts / RINs. 4. Populate tables 5.1, 5.1.1 and 5.1.4 from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. *Note: given TM1 NUoS cube data is available from 2005/06 onwards and represents previously reported figures, all information*	Immaterial variances (less than 0.2%) exist between TM1 NUoS cube data and the information contained in previous audited Regulatory Accounts / RINs. These variances were added back to the 'Energy Delivery where time of use is not a determinant' (DOPED0201) category in table 5.1.1 and the 'Residential customer energy deliveries' (DOPED0501) category in table 5.1.4 to ensure total energy consumption reported is consistent with previous audited Regulatory Accounts / RINs.

Table	Methodology	Assumptions
	provided for these tables consists of Actual Information (no Estimated Information required).	
5.1.2	1. Extract TransGrid system import data from the TM1 TUoS Reconciliation cube at the BSP level for each financial year in the Initial Period and by time period of delivery to the network by TransGrid (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the BSP level to the total from the TM1 TUoS Reconciliation cube to ensure no BSPs have been excluded. 3. TransGrid system import data from the TM1 TUoS Reconciliation cube is used to populate the table in accordance with the Benchmarking RIN Instructions & Definitions. *Note: given TM1 TUoS Reconciliation cube data for TransGrid system imports is available from 2005/06 onwards and represents previously reported figures, all information provided for this table consists of Actual Information (no Estimated Information required).* *Note: system import figures were not reported in previous audited Regulatory Accounts / RINs and therefore these figures cannot be reconciled to previous Regulatory Accounts / RINs.*	None.
5.1.3	1. Extract embedded generation system import data from the TM1 TUoS Reconciliation cube at the embedded generator level for each financial year in the Initial Period and by time period of delivery to the network (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the embedded generator level to the total from the TM1 TUoS Reconciliation cube to ensure no embedded generators have been excluded. 3. Embedded generator system import data from the TM1 TUoS Reconciliation cube is used to populate the table in accordance with the Benchmarking RIN Instructions & Definitions. *Note: system import figures were not reported in previous audited Regulatory Accounts / RINs and therefore these figures cannot be reconciled to previous Regulatory Accounts / RINs.*	Embedded generation data is not available for 2005/06 in the TM1 TUoS Reconciliation cube. As a result, it is necessary to estimate this year for the purposes of completing the Benchmarking RIN templates. Refer to the 'Use of estimated information' section below for the methodology used to estimate the required information.

Use of estimated information

Endeavour Energy has used estimated information in table 5.1.3 for the 2005/06 financial year. Embedded generator data is not available for 2005/06 in the TM1 TUoS Reconciliation cube as this information was only captured and reported from 2006/07 onwards. As a result, it is necessary to estimate this year for the purposes of completing table 5.1.3.

The following methodology was applied to estimate the embedded generator system imports for 2005/06:

a) Calculate total expected system imports for 2005/06 by grossing up total energy consumption for distribution losses (using the calculated distribution loss factor for the 2006/07 financial year);

b) Deduct TransGrid system imports from the result to calculate the amount of system imports estimated to be received from embedded generators; and

c) Split the total amount of system imports estimated to be received from embedded generators amongst the required reporting categories using ratio's derived from the 2006/07 financial year.

Endeavour Energy consider this approach the most reasonable as it maintains the relationship between energy consumption by customers (which is known for the 2005/06 financial year) and energy delivered to Endeavour Energy's network.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 5.1.

Reliability of information

With the exception of the estimate required for embedded generator energy received for the 2005/06 financial year in table 5.1.3, all the information provided represents Actual Information extracted from Endeavour Energy's reporting systems and reconciled to figures reported in previous audited Regulatory Accounts / RINs. As a result, the information contained in the tables in section 5.1 is considered to be reliable.

5.2 Customer numbers

Compliance with requirements of the notice

The data presented in the tables contained in section 5.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 5.2.1 and 5.2.2 represents the average number of NMIs in Endeavour Energy's network for the particular year (except for unmetered customers), calculated as the average of the number of NMIs on the first day of the regulatory year and on the last day of the regulatory year. Both energised and de-energised NMIs are included and extinct NMIs are not included. In addition, customer numbers have been reported in accordance with the categorisation as per the definitions provided in chapter 9 of the Benchmarking RIN Instructions & Definitions; and

- Unmetered customer numbers presented in table 5.2.1 represents the sum of connections (excluding public lighting connections) in Endeavour Energy's network that do not have a NMI and the energy usage for billing purposes is calculated using an assumed load profile. For Endeavour Energy, this predominantly includes unmetered connections related to bus shelters, telephone boxes etc. These figures specifically exclude unmetered connections related to traffic signals on the basis that the customer for the connections has a market NMI and therefore does not meet the definition of an unmetered customer. In addition, public lighting connections are not included in the unmetered customer category but rather included in the 'Non-residential customers not on demand tariff customer numbers' (DOPCN0102) category.

Source of information

Table 5.2.1 - Customer numbers excluding unmetered customers & de-energised customers
The information used to populate table 5.2.1 (excluding unmetered customers and de-energised customers) was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Table 5.2.1 - Unmetered customers
The information used to calculate unmetered customer numbers was extracted from a monthly report provided to the default retailer in Endeavour Energy's network area. This report is generated from Endeavour Energy's billing system (Banner) and includes details of all unmetered connection points in Endeavour Energy's network area and also the date which each supply was connected.

Table 5.2.1 – De-energised customers
Customer numbers obtained from the TM1 NUoS cube originate from Endeavour Energy's billing system and therefore only relate to active or energised customers. The number of de-energised customers was estimated for the Initial Period using information obtained from a C9 Customer Count report run from MSATS as at 30 June 2013. The C9 Customer Count report includes details of customer numbers by status (i.e. Active, De-energised and Greenfield).

Table 5.2.2

Endeavour Energy disclose customer numbers by location on the network in the Electricity Network Performance Report submitted to the Regulator (excluding unmetered customers and de-energised customers). This report was used, in conjunction with customer numbers reported in table 5.2.1, to calculate customer numbers by location on the network and ensure the total customer numbers reconciles to table 5.2.1.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 5.2.

Table	Methodology	Assumptions
5.2.1	1. Extracted 30 June customer number data from the TM1 NUoS cube at the network tariff level for each financial year from 2004/05 to 2012/13. This data represented active or energised customers only and unmetered customer numbers represented number of NMIs billed rather than the number of connection points. This information was used to calculate average customer numbers for the Initial Period (excluding unmetered customers and de-energised customers). 2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 3. The total derived at the individual network tariff level was reconciled to the total customer numbers reported in previous audited Regulatory Accounts / RINs. Where immaterial discrepancies (i.e. less than 1%) were identified, these were noted and added to the figures from the TM1 NUoS cube to ensure total customer numbers reconciled to previous audited Regulatory Accounts / RINs. 4. In order to calculate unmetered customer numbers by connection point, Endeavour Energy utilised the information contained in a monthly report provided to the default retailer in Endeavour Energy's network area. This report is generated from Endeavour Energy's billing system (Banner) and includes details of all unmetered connection points in Endeavour Energy's network area and also the date on which supply was connected. Using the dates from this report, the number of unmetered connection points at the end of each financial year was calculated along with the average for each financial year.	Variances between customer numbers in the TM1 NUoS cube and total customers reported in previous audited Regulatory Accounts / RINs were identified as immaterial. However, in order to ensure active / energised customer numbers (excluding unmetered customers and de-energised customers) reconciled to previous audited Regulatory Accounts / RINs, these variances were added back to the 'Residential customer numbers' (DOPCN0101) category as this represents the largest category in table 5.2.1 and therefore the most likely category contributing to the variance. A limitation with the unmetered connection point report utilised in step 4 is that it will only include details of unmetered connection points as at 1 March 2010 (date of Retail business sale) and any unmetered connection points added to the network from that date. However, given unmetered connection points represent items such as bus shelters, bill boards, telephone boxes etc.; it is unlikely a material number of these would be removed from the network over time. In general, unmetered connection points increase in number over time. As a result, this limitation is considered an insignificant risk. As outlined in step 5, in order to estimate the number of de-energised customers over the Initial Period it was assumed that the proportion of de-energised customers as at 30 June 2013 to total active / energised customers would be applicable to each year in the Initial Period. This assumption was applied because 30 June 2013 represented the most recent available data in relation to the number of de-energised customers.

Table	Methodology	Assumptions
	5. In order to estimate the number of de-energised customers over the Initial Period, Endeavour Energy obtained a MSATS C9 Customer Count report as at 30 June 2013. C9 Customer Count reports from MSATS detail the number of customers by status including Active, De-energised and Greenfield. Endeavour Energy calculated the proportion of de-energised customers as at 30 June 2013 to the total active / energised customers as at 30 June 2013 and applied this proportion to each year in the Initial Period to estimate de-energised customers. An average for each financial year was calculated. 6. Based on the results of the steps above table 5.2.1 was populated. Customer numbers for active / energised customers and the number of unmetered connection points was recorded in the Actual template (as this information was extracted directly from business systems), however de-energised customer numbers were recorded in the Estimated template due to the assumption applied to derive historic figures. In addition, the total number of de-energised customers (calculated in step 6) was allocated to the 'Other Customer Numbers' (DOPCN0106) category on the basis that de-energised customers do not have a network tariff assigned and therefore cannot be allocated to any of the other customer categories.	
5.2.2	1. Information on customer numbers by location on the network is reported in Endeavour Energy's annual Electricity Network Performance Report. These constitute averages for the year and are calculated using the customer number data from the TM1 NUoS cube on a monthly basis (excluding unmetered customers and de-energised customers) and therefore reflect active / energised customers only. 2. Total customer numbers from the Electricity Network Performance Report were reconciled to total customer numbers calculated for table 5.2.1 (excluding unmetered customers and de-energised customer numbers). Given the variances identified were immaterial (i.e. less than 1%), total customer numbers from table 5.2.1 (excluding unmetered customers and de-energised customers) was prorated against the network location categories using the information from the Electricity Network Performance Report. This was done to ensure customer numbers per table 5.2.2 reconciled to	Endeavour Energy does not identify or report unmetered customers / connection points or de-energised customers by their location on the network (i.e. they are not reported in the Electricity Network Performance Report). Therefore, in order to split unmetered customer and de-energised customer numbers by location on the network, it was assumed that the proportion of total unmetered customer and de-energised customer numbers (from table 5.2.1) connected to each location on the network followed the same proportion as active / energised customers. Endeavour Energy considers this a reasonable assumption to apply for the purposes of populating table 5.2.2.

Table	Methodology	Assumptions
	the customer numbers in table 5.2.1 (excluding unmetered customers and de-energised customers). 3. In order to account for unmetered customers and de-energised customers in table 5.2.2, a similar process was undertaken in which total unmetered customers and total de-energised customers from table 5.2.1 were prorated against the network location categories using the information from the Electricity Network Performance Report. This was done to ensure the total customer numbers per table 5.2.2 reconciled to the total customer numbers in table 5.2.1. However, given the Electricity Network Performance Report did not include unmetered or de-energised customers this results in unmetered and de-energised customer number data being estimated in table 5.2.2, rather than based on actual business systems or reports. 4. The customer numbers calculated in step 2 and step 3 were used to populate table 5.2.2 in accordance with the Benchmarking RIN Instructions & Definitions.	

Use of estimated information

As outlined above, both table 5.2.1 and table 5.2.2 include Estimated Information as set out below:

- Customer numbers reported in these tables must represent both energised and de-energised NMIs (with the exception of unmetered customer numbers which represent connection points). Figures obtained from the TM1 NUoS cube represent active / energised customers only and therefore exclude de-energised customers. A reliable reflection of the number of de-energised customers over the Initial Period is not maintained in business systems or reported, however, this data was obtained from a MSATS C9 Customer Count report as at 30 June 2013. Therefore, in order to estimate the number of de-energised customers over the Initial Period it was assumed that the proportion of de-energised customers as at 30 June 2013 to total active / energised customers would be applicable to each year in the Initial Period. This resulted in the number of de-energised customers over the Initial Period being an estimated figure rather than an actual figure; and

- Endeavour Energy does not identify or report unmetered customers / connection points or de-energised customers by their location on the network (i.e. they are not reported in Endeavour Energy's Electricity Network Performance Report). Therefore, in order to split unmetered customer and de-energised customer numbers by location on the network, it was assumed that the proportion of total unmetered customer and de-energised customer numbers (from table 5.2.1) connected to each location on the network followed the same proportion as active / energised customers. This resulted in unmetered customer numbers and de-energised customer numbers being estimated for the purposes of populating table 5.2.2.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 5.2.

Reliability of information

With the exception of the estimate required for calculating de-energised customer numbers and allocating unmetered customers and de-energised customers to relevant locations on the network, all the information provided represents Actual Information extracted from Endeavour Energy's reporting systems and, where possible, reconciled to figures reported in previous audited Regulatory Accounts / RINs. As a result, the information contained in the tables in section 5.2 is considered to be reliable.

5.3 System demand

Table 5.3.1 – Annual system maximum demand characteristics at the zone substation level – MW measure

Compliance with requirements of the notice

The data that has been supplied complies with the requirements of the notice as it has been calculated using the method outlined in the Economic Benchmarking RIN.

Source of information

Network Load History Database, Summer Demand Forecast 2014-23 & 2012-21, Winter Demand Forecast 2013-22.

Methodology and assumptions

Assumption – For non-coincident demand, the peak for each substation may not be the actual system peak recorded in the financial year. It is the peak recorded in the season that the system peak occurred. For example, if the system peak occurred in summer then the summer peak for each substation is provided even though the substation may be winter peaking in that financial year.

Winter peaking in FY2008 and FY2012.

DOPSD0101 – This was calculated by taking the summation of all individual zone substations and high voltage customers' peaks for the relevant financial year in MW.

DOPSD0102 – This was calculated by taking summation of all individual zone substations and high voltage customers temperature corrected values at the 10% PoE MW level.

DOPSD0103 – This was calculated by taking the summation of all individual zone substations and high voltage customers temperature corrected values at the 50% PoE MW level.

DOPSD0104 – This was calculated by the summation of all zones and high voltage customers (in MW) by date and time and then finding the maximum of the summated values.

DOPSD0105 – Summation of all zone substations and high voltage customers by date and time and then temperature correcting the summated values at the 10% PoE MW Level.

DOPSD0106 – Summation of all zone substations and high voltage customers by date and time and then temperature correcting the summated values at the 50% PoE MW Level.

Use of estimated information

The systems and processes that were used to provide the above RIN entries are those that are used in the normal course of business and thus are actual information. No estimated figures were used for this section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information has been directly taken from the Network Load History database and audited forecasting documents.

Table 5.3.2 – Annual system maximum demand characteristics at the transmission connection point – MW measure

Compliance with requirements of the notice

The data that has been supplied complies with the requirements of the notice as it has been calculated using the method outlined in the Economic Benchmarking RIN.

Source of information

Network Load History Database, Summer Demand Forecast 2014-23 & 2012-21, Winter Demand Forecast 2013-22.

Methodology and assumptions

Assumption – The financial year peak for each transmission substation would correspond to the Endeavour Total peak for the relevant financial year.

Winter peaking in FY2008 and FY2012.

DOPSD0107 – This was calculated by taking the summation of all individual transmission substations (EE Bulk Supply Points) peaks for the relevant financial year in MVA and convert to MW by their respective power factors.

DOPSD0108 – This was calculated by the summation of all transmission substation (EE Bulk Supply Points) temperature corrected values at the 10% PoE MW level.

DOPSD0109 – This was calculated by the summation of all transmission substation (EE Bulk Supply Points) temperature corrected values at the 50% PoE MW level.

DOPSD0110 – This was calculated by the summation of all transmission substations (EE Bulk Supply Points) in MW by date and time and then finding the maximum of the summated values.

DOPSD0111 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and then temperature correcting the summated values at the 10% PoE MW Level.

DOPSD0112 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and then temperature correcting the summated values at the 50% PoE MW Level.

Use of estimated information

The systems and processes that were used to provide the above RIN entries are those that are used in the normal course of business and thus are actual information. No estimated figures were used for this section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information has been directly taken from the Network Load History database and audited forecasting documents.

Table 5.3.3 – Annual system maximum demand characteristics at the zone substation level – MVA measure

Compliance with requirements of the notice

The data supplied complies with the requirements of the notice as it has been calculated using the method outlined in the Economic Benchmarking RIN.

Source of information

Network Load History Database, Summer Demand Forecast 2014-23 & 2012-21, Winter Demand Forecast 2013-22.

Methodology and assumptions

Assumption – The power factors of the Endeavour Energy network are used in the conversion of MVA at the zone and high voltage customer level.

Winter peaking in FY2008 and FY2012.

In this section DOPSD0201, DOPSD0204, DOPSD0205 and DOPSDO206 were calculated using the power factor from *Table 5.3.5 Power factor conversion between MVA and MW - DOPSD0301.* The MW values used to convert into MVA were obtained from the corresponding financial year and values contained in Table 5.3.1. The power factor contained in DOPSD0301 is calculated from endeavour energy network total.

DOPSD0202 - This was calculated by the summation of all individual zone substations and high voltage customer temperature corrected values at the 10% PoE MVA level.

DOPSD0203 - This was calculated by the summation of all individual zone substations and high Voltage Customer temperature corrected values at the 50% PoE MVA level.

Use of estimated information

The systems and processes that were used to provide the above RIN entries are those that are used in the normal course of business and thus are actual information. No estimated figures were used for this section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information has been directly taken from the Network Load History database and audited forecasting documents.

Table 5.3.4 – Annual system maximum demand characteristics at the transmission connection point – MVA measure

Compliance with requirements of the notice

The data supplied complies with the requirements of the notice as it has been calculated using the method outlined in the Economic Benchmarking RIN.

Source of information

Network Load History Database, Summer Demand Forecast 2014-23 & 2012-21, Winter Demand Forecast 2013-22.

Methodology and assumptions

Assumption – The power factors of the network are used in the conversion of MVA.

Winter peaking in FY2008 and FY2012.

DOPSD0207 – This was calculated by taking the summation of all individual transmission substations (EE Bulk Supply Points) peaks for the relevant financial year in MVA.

DOPSD0208 – This was calculated by taking the summation of all transmission substation (EE Bulk Supply Points) temperature corrected values at the 10% PoE MVA level.

DOPSD0209 – This was calculated by taking the summation of all transmission substation (EE Bulk Supply Points) temperature corrected values at the 50% PoE MVA level.

DOPSD0210 – This was calculated by the summation of all transmission substations (EE Bulk Supply Points) in MW by date and time and then finding the maximum of the summated values in MW and convert to MVA by their respective power factors.

DOPSD0211 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and then temperature correcting the summated values at the 10% PoE MW Level and convert to MVA by their respective power factors.

DOPSD0212 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and then temperature correcting the summated values at the 50% PoE MW Level and convert to MVA by their respective power factors.

Use of estimated information

The systems and processes that were used to provide the above RIN entries are those that are used in the normal course of business and thus are actual information. No estimated figures were used for this section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information has been directly taken from the Network Load History database and audited forecasting documents.

Table 5.3.5 – Power factor conversion between MVA and MW

Compliance with requirements of the notice

The data that has been supplied complies with the requirements of the notice as it has been calculated using the method outlined for the benchmark, i.e. dividing the MW value by MVA to obtain the power factor. The Summer Demand Forecast (SDF) document contains power factor data calculated using this method for all zone substations in Endeavour Energy's network.

Source of information

Summer Demand Forecast 2008 – 2004/05, 2006/07
Summer Demand Forecast 2014 – 2007/08, 2008/09, 2009/2010, 2010/11, 2012/13

Methodology and assumptions

Overall system power factor

This is the calculated power factor derived from actual total system coincident MW and MVAr load history. This power factor is a published value in the annual Summer Demand Forecast.

132kV
The average power factor was found by calculating the sum of all corresponding 132kV bulk supply point MW and MVAR using data from the Summer Demand Forecast (SDF) reports listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

66kV
The average power factor was found by calculating the sum of all corresponding 66kV bulk supply point MW and MVAR and the 66kV secondary transmission substation MW and MVAr using data from the Summer Demand Forecast (SDF) reports listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

33kV
The average power factor was found by calculating the sum of all corresponding 33kV secondary transmission substation MW and MVAr using data from the Summer Demand Forecast (SDF) reports listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

11kV and 22kV
The average power factor was found by calculating the sum of all corresponding zone substation MW and MVAR using data from the aforementioned SDF report.

Adjustments were made to MVAR data by adding VARs associated with capacitor banks on the 11kV and 22kV busbar at zone substations in order to capture native MVAr load.

12.7kV SWER
The PF of our SWER lines were taken to be the power factor at Kandos ZS, where most of our SWER lines are located.

Low Voltage
There is no metering or SCADA information for the vast majority of the low voltage network. The power factor of our LV distribution network was assumed to be the same as the 11kV network power factor, since 11kV is the main network distribution voltage for Endeavour Energy.

Use of estimated information

Low Voltage power factor was estimated in line with the methodology and assumptions above.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

The assumptions that have been made were done as a best estimate due to the limited availability of data relating to the distribution and SWER lines.

The power factor values included in this section are based on actual data and do not make use of estimates, making the information provided reliable.

Table 5.3.6 & 5.3.7 Demand Supplied

Compliance with requirements of the notice

The data presented in tables 5.3.6 and 5.3.7 contained in section 5 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 5.3.6 represents the total Maximum Demand amount supplied to customers as measured in MW. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand; and

- The data presented in table 5.3.7 represents the total Maximum Demand amount supplied to customers as measured in MVA. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand.

Source of information

The information used to populate tables 5.3.6 and 5.3.7 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited RINs. It is a cube based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for tables 5.3.6 and 5.3.7.

Table	Methodology	Assumptions
5.3.6	1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for each financial year in the Initial Period. 2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process. 3. The detailed TM1 NUoS cube data was used to populate table 5.3.6 in accordance with the Benchmarking RIN Instructions & Definitions. Only those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category are charged Maximum Demand on a measured MW basis.	None.
5.3.7	1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for each financial year in the Initial Period. 2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process. 3. The detailed TM1 NUoS cube data was used to populate table 5.3.7 in accordance with the Benchmarking RIN Instructions & Definitions. All customers, except those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category, are charged Maximum Demand on a measured MVA basis.	None.

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, to populate tables 5.3.6 and 5.3.7.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables 5.3.6 and 5.3.7.

Reliability of information

All the information provided represents Actual Information (as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions) extracted from Endeavour Energy's reporting systems. As a result, the information contained in the tables 5.3.6 and 5.3.7 is considered to be sufficiently reliable.

Worksheet 6 – Physical assets

6.1 Network capacities variables

Compliance with requirements of the notice

Endeavour Energy has reported network circuit length and circuit capacity MVA capacities for low voltage to 132kV voltages in line with AER RIN Instructions and Definitions document for Final RIN for Economic Benchmarking.

6.1.1 and 6.1.2

DPA0101 to DPA0206 Circuit Lengths

Source of information

Circuit length actual data (DPA0101 to DPA0107 and DPA0201 to DPA0206) was determined from H: drive copies of ESAA reports for each financial year period. A calculation was used to determine the corresponding totals (DPA01 and DPA02). This is because current asset management systems do not have historical snapshot capabilities, enabling a view of assets, their status and attributes at a point in time.

Methodology and assumptions

The H: drive copies of ESAA reports and report data was considered the best available data for the purpose of completing this report. These were derived from Asset (Ellipse), SOPS and geospatial systems close to the end of each financial year. Asset (Ellipse), SOPS and geospatial systems do not have readily available historical or audit-trail records to enable this reporting, hence the use of H: drive copies of ESAA reports and data. Specific assumptions are detailed further in 'Use of estimated information'.

Use of estimated information

The information used to provide circuit lengths is derived from systems that are used in the normal course of business and thus are considered actual information. Our system is constantly updated and can produce dynamic results. The figures are accurate as at the time the report is generated.

6.1.3 and 6.1.4

Low Voltage Mains DPA0301 and DPA0301

Source of information

Circuit Capacity MVA was estimated data, based on samples of conductor lengths and characteristics. Conductor ratings were based on the Tltab.xls file which is a ratings reference file used in Endeavour Energy's corporate load flow system.

Methodology and assumptions

Data for overhead and underground conductors was separated using the Conductor characteristic field which indicates whether a conductor is overhead or underground construction.

For the most common LV conductors (70% ranked by length) the weighted average MVA capacity was calculated as follows

Weighted average LV Overhead (or Underground) MVA capacity = ((Rating of LV conductor No. 1 x Total circuit length of conductor no. 1) + (Rating of LV conductor No. 2 x Total circuit length of conductor no. 2) + …. (Rating of LV conductor No. n x Total circuit length of conductor no. n))/ (Total of all conductor lengths in sample)

Use of estimated information

DPA0301 and DPA0401 data were determined for 2005-2006 and 2008-2009 and provided by ANP – Asset and Network Planning, based on sampling the most common (about 70%) Over Head (OH) and Under Ground (UG) Low Voltage (LV) conductors and determining a weighted average capacity. This was then used to determine an estimated yearly difference and 'straight line estimate' data for each year in between.

High Voltage Mains DPA0302, DPA0303, DPA0304, DPA0402, DPA040

Source of information

Circuit Capacity MVA was estimated data, based on samples of conductor lengths and characteristics. Conductor ratings were based on the Tltab.xls file which is a ratings reference file used in Endeavour Energy's corporate load flow system. For 11 kV and 22kV underground mains Endeavour Energy standard MDI0011 for Underground distribution was applied, using both the Underground rating and de-rating using proximity rating factors for underground ratings.

Methodology and assumptions

Data for overhead and underground conductors was separated using the conductor characteristic field which indicates whether a conductor is overhead or underground construction.

De-rating factors from MDI0011 for underground cables were applied to ratings in the TlTab.xls file to account for groups of cables in the same duct bank. The no. of cables in the same duct bank can vary significantly in the network; the most common configurations are between 2 and 6. As such an assumption of 4 cables in the duct bank was assumed as the average for all cables.

For the most common HV conductors (ranked by length) the weighted average MVA capacity was calculated as follows

Weighted average HV Overhead (or Underground) MVA capacity = ((Rating of HV conductor No. 1 x Total circuit length of conductor no. 1) + (Rating of HV conductor No. 2 x Total circuit length of conductor no. 2) + …. (Rating of HV conductor No. n x Total circuit length of conductor no. n))/ (Total of all conductor lengths in sample)

Use of estimated information

- The most common conductors are used as a representative sample to estimate the weighted average capacity of the whole network.

- DPA0302-4 and DPA0402-3 were provided based on MVA capacity calculated from continuous current rating based on ratings in the Tltab.xls file. An. For underground cables an additional step was taken by applying a de-rating factor based on MDI0011 assuming an average of four cables in the same bank of ducts.

Subtransmission Mains DPA0404, DPA0405, DPA0406, DPA0305, DPA0306, DPA0307

Source of information

The main source of information is the Network Characteristics database which is a corporate document containing the lengths and ratings of each section of all subtransmission feeders in the network. For this exercise a copy of the Network Characteristics file from July 2013 was taken as the view of 2012/13. This file is available in H:\SPB\filing\network characteristics\.

To adjust for changes to conductors and feeders back to 2008/09 a review of a "change log" which was kept as part of an older version of Network Characteristics (Oct 2012) available in g:\share\network\transmission\network characteristics.

Methodology and assumptions

Using data for each subtransmission feeder the weighted average MVA capacity was calculated as follows

Weighted Average MVA capacity by voltage = ((Rating of feeder No. 1 x Total circuit length of feeder no. 1) + (Rating of feeder No. 2 x Total circuit length of feeder no. 2) + …. (Rating of feeder No. n x Total circuit length of feeder no. n))/ (Total of feeders by voltage)

Use of estimated information

DPA0305-7 were determined for 2008-2009 and 2012-2013 and provided by ANP, based on the Network Characteristics file for identified individual feeders. This file contains the ratings and impedance for every section of sub-transmission feeder in the Endeavour Network. A weighted average MVA capacity was determined in line with the Circuit Capacity weighted average MVA capacity method outlined in DNSP AER RIN – Instructions and definitions. This was then used to determine an estimated yearly difference to then 'straight line estimate' data for each year back to 2006 and in between. Feeders have a combination of overhead and underground sections; however one rating assigned to each feeder based on the most limiting section. This rating and total feeder length is then used to calculate weighted average MVA capacity by circuit length by voltage.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Circuit length data is based on actual information extracted from Endeavour Energy's systems. Circuit capacity data has been estimated using the methodology and assumptions detailed above.

6.2 Transformer capacities variables

Compliance with requirements of the notice

Endeavour Energy has reported Transformer Capacities Variables in line with AER RIN Instructions and definitions document for Final RIN for economic benchmarking.

Endeavour Energy company policy 9.8.3 for Network Operations specifies 'hot standby' therefore Cold spare capacity figures DPA0503 and DPA0605) have been reported as zero in line with DNSP AER RIN – Instructions and definitions.

Source of information

Distribution transformer capacity owned by the utility has been sourced from historical copies of end of financial year Cognos reports (TX008, which is sourced from the Asset (Ellipse) management system).
Distribution transformer capacity owned by High Voltage Customers (HVC) has been determined using a master list of HVC customers by NMI (sourced from System Support), then from Metering interval data, generally in line with the method described in the AER definitions, through using maximum kWh interval and converted to MVA.

Zone substation transformer capacity has been determined from H: drive historical copies of ESAA reports and report data. It was necessary to categorize transformer capacity differently for DPA0601-4 to meet the report needs, this meant reviewing primary and secondary voltage data captured in supporting files in the respective H: drive / year directories.

Methodology and assumptions

Printed copies of Transmission Network Planning Reports (TNPR) were reviewed; however TNPR's are forward looking recommendations, contain out-dated Single Line Diagrams (SLD) in several cases and therefore were not considered accurate for this reporting. Recommended network augments in TNPR's can take up to 5 years to implement or not proceed, this is possible where augmentation projects are delayed, or a demand management project is implemented.

The H: drive copies of ESAA reports and report data was considered the best available data for the purpose of completing this report. It is derived from Asset (Ellipse), and SOPS systems close to the end of the financial year. Asset (Ellipse) and SOPS systems do not have readily available historical or audit-trail records to enable this reporting, hence the use of H: drive copies of ESAA reports and data.

Note: 2005-2006 ESAA report copies and data were reviewed and a minor typographical error appears to have occurred for the ESAA 2005-2006 report data, resulting in a discrepancy of 29 MVA from 11766 (about 0.2%), this reporting has what is believed to be the correct figure. All other years appeared to be correct.

Please note: The total zone substation capacity at DPA0604 has been reported as required by the RIN instructions as the sum of DPA0601, DPA0602, DPA0603 and DPA0605. This total is not the zone substation capacity, but includes subtransmission capacity, where two step transformation is involved. **If DPA0604 in its current form is used for benchmarking it will lead to inappropriate comparisons with other organisations that do not have two step transformation. DPA 0604 should be the sum of DPA0602, DPA0603 and DPA0605.**

Use of estimated information

Except for DPA0502 (High Voltage Customers) Endeavour Energy has used available reported information for this section, derived from systems that are used in the normal course of business. Thus Endeavour transformer capacities are considered actual information.

For DPA0502 HVC customer capacity figures were estimated by determining maximum demand (kWh) values for each Financial Year period, from historically available metering data. This was then converted to a kW figure, then to a KVA figure using 0.9 power factor in line with company procedure NCP 1111. This aligned with the AER definitions in respects of determining an estimated figure, however based on kWh.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

As noted above, except for DPA0502 (High Voltage Customers), Endeavour Energy has used available reported information for this section.

6.3 Public lighting

Compliance with requirements of the notice

Endeavour Energy has public lighting luminaires in line with AER RIN Instructions and Definitions document for Final RIN for Economic Benchmarking. Endeavour Energy has added an additional row (DPA0703) to include the number of columns that are used exclusively for street lighting as well as the number of poles as required at DPA0702.

Source of information

The "Public Lighting Luminaires" data (Table 6.3 DPA0701) has been provided for each financial year. The data is extracted from predefined queries developed for the purposes of extracting this and similar data in a controlled and consistent manner using the organisation's COGNOS 8 program. COGNOS 8 extracts this data from Ellipse (the organisations asset management database). This data has been extracted for the historical periods required both for assets owned, operated and maintained by Endeavour Energy and also for those assets not owned but operated and maintained by Endeavour Energy.

The "Public Lighting Poles" (Table 6.3 DPA0702) and "Public lighting columns" (Table 6.3 DPA0703) cannot be extracted from Ellipse for historical periods. Therefore the ratios of these assets to the total "Public Lighting Luminaires" as of the date 12th February 2014 have been used to determine the entries in Table 6.3.

Methodology and assumptions

For assets owned, operated and maintained by Endeavour Energy, the Public Lighting Luminaires data (DPA0701) is provided for 30th June of each year (2006 to 2013) using extracts from Cognos 8 as shown in Table 1 below.

Table 1: Assets owned, operated and maintained by Endeavour Energy (Assets with 50% sharing accounted)

	6.3 Public lighting	2006	2007	2008	2009	2010	2011	2012	2013
DPA0701	Public lighting luminaires	165990	177330	182098	183913	185972	188963	191643	195056
DPA0702	Public lighting poles	6011	6422	6595	6660	6736	6844	6940	7065
DPA0703	Public lighting columns	86917	87086	89428	90319	91331	92799	94116	95791

The "Public Lighting Poles" and "Public lighting columns" cannot be extracted from Ellipse for historical periods. Therefore the ratios of these assets to the total "Public Lighting Luminaires" as at the date 12th February 2014 have been determined as shown below in Table 2.

Table 2: Assets owned, operated and maintained by Endeavour Energy (as of the 12/02/2014)

	6.3 Public lighting	12 Feb 2014
DPA0701	Public lighting luminaires	197120
DPA0702	Public lighting poles owned by Endeavour Energy	7446
DPA0703	Public lighting columns	96772

The ratio of Public lighting poles to Public lighting luminaires is 7446/197120 = 0.0377739
The ratio of Public lighting columns to Public lighting luminaires is 96772/197120 = 0.4909293

The numbers of public lighting poles and public lighting columns for each year have been calculated by applying these ratios to the total luminaires extracted from COGNOS and reported at DPA0701. The results of this calculation are shown at DPA0702 and DPA0703 in Table 1 above and assume that dedicated poles and columns have occurred at the same rate as new luminaires over the 2006 to 2013 period.

For assets not owned but operated and maintained by Endeavour Energy, the same methodology was used. The results of the COGNOS extract are shown in Table 3 DPA0701.

Table 3: Assets not owned but operated and maintained by Endeavour Energy.

	6.3 Public lighting	2006	2007	2008	2009	2010	2011	2012	2013
DPA0701	Public lighting luminaires	489	522	536	542	547	556	565	574
DPA0702	Public lighting poles	277	296	304	307	310	315	320	325
DPA0703	Public lighting columns	212	226	232	235	237	241	245	249

The data extract as at 12 February 2014 as shown in Table 4 below allows the ratios for public lighting poles and public lighting columns to be calculated and applied to the data in Table 3 DAP0701 to calculate the data shown at Table 3 DPA06702 and DPA0703.

Table 4: Assets not owned but operated and maintained by Endeavour Energy.

	6.3 Public lighting	12 Feb 2014
DPA0701	Public lighting luminaires	579
DPA0702/1	Public lighting poles	328
DPA0703	Public lighting columns	251

The ratio of Public lighting poles to Public lighting luminaires is considered as 328/579 = 0.56649391
The ratio of Public lighting columns to Public lighting luminaires is considered as 251/579 = 0.433506

Adding the data in Tables 1 and 3 provides the data shown in Table 5 below which is the same as the data reported at Table 6.3 of the AER's templates.

Table 5: Total of both assets owned, operated and maintained and also not owned but operated and maintained by Endeavour Energy.

	6.3 Public lighting	2006	2007	2008	2009	2010	2011	2012	2013
DPA0701	Public lighting luminaires	166479	177852	182634	184455	186519	189519	192208	195630
DPA0702	Public lighting poles	6288	6718	6899	6967	7046	7159	7260	7390
DPA0703	Public lighting columns	87129	87312	89660	90554	91568	93040	94361	96040

All of the tables above do not include privately owned street lights that are separately metered.

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, to populate table 6.3.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the table 6.3.

Reliability of information

All the information provided represents Actual Information (as defined in Chapter 9 of the Economic Benchmarking RIN Instructions & Definitions) extracted from Endeavour Energy's reporting systems.

Worksheet 7– Quality of services

7.1 Reliability

Compliance with requirements of the notice

Reported SAIDI/SAIFI complies with the requirements of the Economic Benchmarking RIN. The following aspects are noted:

1. **Major Event Days (MED's)** have been determined in accordance with the requirements of section 8.1 of the AER RIN explanatory statement. The 2012/13 MED SAIDI threshold is 4.98, therefore any day in the years 2005/06 to 2012/13 that exceeded this threshold was classified as a MED. As a consequence, the number of MEDs and adjusted statistics will differ from previously reported information.

2. **Outages affecting single premises –** reliability information for the years 2005/06 to 2011/12 inclusive does not include outages affecting single premises as they were not recorded in the data base (SFR) used at the time. Single premise outages that occur as a result of a fault on Endeavour Energy's network are included in the 2012/13 reliability result, as these outages are now recorded in the current Outage Management System.

3. **Subsequent interruptions caused by network switching during fault finding,** in general switching operations associated with an unplanned incident may include subsequent interruptions to customers that are associated with fault finding. Current systems do not have any facility to identify these operations and therefore exclude them from reliability calculations. It should be noted that removing these operations from reliability calculations would result in an inaccurate record of actual customer experience.

4. We note that in Schedule 1 of the RIN, defines a sustained interruption as being greater than 0.5 seconds. However, the SAIDI definition in appendix A of the STPIS also states that unplanned SAIDI excludes momentary interruptions (**one minute or less).**

   The MAIFI definition is "The total number of customer interruptions of **one minute or less**"

   Therefore our interpretation of the RIN 0.5 second threshold is that it applies as a minimum threshold for a momentary interruption (MAIFI) and this RIN does not require the reporting of MAIFI.

Source of information

1. **Base outage data (customers interrupted and CMI)**

   2005/06 to 2011/12 – Data sourced from System Fault Recording database (SFR). All records entered into this database were in accordance with a Work Place Instruction WPB1007. This database has been replaced by the Outage Management System (OMS).

   Reporting tool – Cognos 7 impromptu

   20012/13 – Data sourced from OMS. All records in this database were validated and checked in accordance with a Work Place Instruction WPB1014.

   Reporting tool – Cognos 8

2. **Customer numbers for calculation of SAIDI and SAIFI**

   Customer numbers used to calculate SAIDI and SAIFI were average customer numbers for the relevant reporting period and were sourced from previously published Electricity Network Performance Reports.

Methodology and assumptions

MED days – MED day threshold of 4.98 (2012/13 threshold) was applied to all previous years. Daily total unplanned SAIDI values for each year were calculated and any day that exceeded the MED threshold was excluded.

Excluded interruptions – Reporting tools Cognos 7 and 8 identify excluded interruptions based on a cause that is assigned to each interruption.

Customer numbers – It should be noted that the accuracy of customer numbers and its impact on SAIDI has been the subject of an AER audit and recent IT projects have been completed to rectify the identified errors.

The errors cannot be removed from historical and are therefore likely to have some impact on the reported SAIDI/SAIFI information.

Use of estimated information

The information used to provide reliability statistics is derived from systems that are used in the normal course of business and thus considered to be actual information.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 7.1.

Reliability of information

All the information provided represents actual information extracted from Endeavour Energy's reporting systems and reconciled to reported figures in previous audited RINs. As a result the information contained in the tables in section 7.1 is considered to be reliable cognisant of the comments made above.

7.2 Energy not supplied

Compliance with requirements of the notice

We were unable to fully comply with any of the methods prescribed by the AER in the Economic Benchmarking RIN. Options were:

1. **average consumption of the customers interrupted based on their billing history; -** SFR data base (2005/06 to 2011/12) did not record individual customers affected by each interruption.

2. **feeder demand at the time of the interruption divided by the number of customers on the feeder; -** feeder demand at the time of the outage not recorded in either SFR or OMS

3. **average consumption of customers on the feeder based on their billing history; -** Customers in the billing system (Banner) do not have the feeder allocated.

   An attempt was made to obtain historical customer consumption data from 2009/10 onwards, match it up to known customer feeder data and then pro rate and estimate for current and previous years. This involved millions of rows of data which reporting tools could not manage and limited customer connectivity data. A number of estimations and assumptions would also have had to be made which would have introduced inaccuracies.

4. **average feeder demand derived from feeder Maximum Demand and estimated load factor divided by the number of customers on the feeder**. – No definition provided to allow accurate allocation of load factor

The provided information is an estimation of data using a variant of option 1. Refer below for more detail.

Source of information

Energy not supplied - Unplanned – SFR and OMS customer minutes off supply used to calculate unplanned SAIDI in section 7.1.1.

Energy not supplied - Planned – Customer minutes off supply used to calculate Planned SAIDI for internal management reporting and the 2005/06 to 2012/13 Electricity Network Performance Reports. This data is supplied by System Control

Methodology and assumptions

Average annual consumption of **all** customers was divided by the number of customers, average days of supply and minutes per day (1440) to obtain an average kWh per minute consumption per customer, for each reporting period.

Average kWh per minute per customer was then multiplied by the number of customers interrupted and the duration of the interruption to determine kWh energy not supplied (expressed as GWh in the RIN).

Consumption data per customer was only obtained back to 2009/10 and therefore 2009/10 kWh per minute consumption was applied to the previous years.

The method that Endeavour has adopted is a variant of the AER's option 1, using averaged customer consumption data.

Use of estimated information

Endeavour Energy has used estimated information for table 7.2 - refer above

- An estimate was required because we were unable to apply current or historical data to get actual information in accordance with the AER prescribed options.

  Limitations included:

  - lack of complete data for all reporting periods
  - Available data in large volumes and separated across different information systems.
  - merging data sets unmanageable and requires a large degree of assumptions to be made

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

All information provided represents estimated information as the data for table 7.2 is not readily available or captured.

7.3 System losses

Compliance with requirements of the notice

The data that has been supplied complies with the requirements of the notice as it has been calculated using the method outlined in the Economic Benchmarking RIN. The annual Electricity Network Performance Report (ENPR) document contains this information calculated using the formula provided in the instructions.

Source of information

Electricity Network Performance Report 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013

Methodology and assumptions

The data used for this section was supplied directly from the ENPR for the corresponding year. This can be done since Endeavour Energy calculates its system loss factor using the same formula outlined by the AER.

$$\text{system losses} = \frac{\text{energy received by dist. network} - \text{energy distributed}}{\text{electricity received by dist. network}} \times 100\%$$

Use of estimated information

No estimated figures were used for this section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

The system loss factor values included in this section are based on audited data and do not make use of estimates, making the information provided reliable.

7.4 Capacity utilisation

Compliance with requirements of the notice

The data presented in table 7.4 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

The sources of information are other tables in the RIN as listed below:

- 6.2.2 Zone Substation Transformer Capacity
- 5.3.1 Annual system demand characteristics at the zone substation level

Methodology and assumptions

Utilisation is calculated reference other tables in the economic benchmarking RIN as per the formula below:

Utilisation (DQS04) = DOPSD0201/ (DPA0602 + DPA0603+DPA0605)

This is the total undiversified maximum demand at zone substation (MVA) level divided by the sum of zone substation transformer capacity (MVA).

Use of estimated information

Refer to basis of preparation for 6.2.2 and 5.3.1.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Refer to basis of preparation for 6.2.2 and 5.3.1.

Worksheet 8 – Operating environment factors

8.1 Density factors

Compliance with requirements of the notice

The data presented in table 8.1 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Customer density numbers use the figure in 5 Operational data worksheet, item DOPCN01. Route Line Length (an estimate) is from 8.3, item DOEF0301.

Energy density MWh (converted from GWh) figures are from worksheet 5, item DOPED01 in line with the AER definition.

Demand density MVA (converted to KVA) figures are from worksheet 5, item DOPSD0210 in line with the AER definition for using Zone Substation figures.

Actual sources of information are considered actual values as they are derived from systems that are used in the normal course of business.

Endeavour Energy has calculated the Energy and Demand density factors as follows:

- DOEF0102 is actual based on DOPED01 * 1000 / DOPCN01 for each year
- DOEF0103 is actual based on (DOPSD0203* 1000) / DOPCN01 for each year

Methodology and assumptions

It is assumed the number of Customers, Route Line Length, GWh, and kVA, reported elsewhere in the RIN are correct and appropriate to the reporting required.

Use of estimated information

As the sources of information are considered to deliver actual values, the ratios of these quantities are also considered to be actual values.

Endeavour Energy has calculated Customer density factors as follows:

- DOEF0101 is estimated based on DOPCN01 / DOEF0301 for each year

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information provided represents estimated and actual information as the data for table 8.1 is based on data reported elsewhere in the RIN.

8.2 Terrain factors

Compliance with requirements of the notice

The data presented in table 8.1 is consistent with the requirements of the Economic Benchmarking RIN. In particular, Endeavour Energy has provided data for the most recent Regulatory year. Back cast information has been provided for DOEF0201, DOEF0205, DOEF0206 and DOEF0207. The remaining cells in table 8.2 have been blacked out in accordance with the "Variables that are not applicable" section of the Instructions and Definitions at pages 5 and 6.

Source of information

Information provided in table 8.2 was sourced from Endeavour Energy's Geographical Information System (GIS), Rural Fire Service map polygons applied to the GIS, a Scope and Audit review of vegetation management contracts using the work flow management system AM4, the Bureau of Meteorology web site and the Vegetation Program Completion Process.

Work flow Management System AM4:

The Active Tree Service "AM4 System" delivers to Endeavour Energy potential service improvements and cost savings through the provision of an auditable, sophisticated workflow management system that is geospatially enabled (including tracking) with real time data capability.

This product is built on Microsoft SQL Server 2008 R2 technologies, Microsoft SharePoint 2010 technologies, and the Esri ArcGIS Server and ArcGIS Mobile products.
Endeavour Energy implements the workflow described below to manage;

1. Vegetation Management contracts
2. Auditing function
3. the Defect management system to integrate with the Ellipse corporate asset database.

The Vegetation Program Completion Process is detailed in Branch Work Place Instruction WVM 0838.The purpose of this Branch Workplace Instruction is to define the process, including clarity of roles and responsibilities within the Vegetation Control Section of the Maintenance Branch. It is also to minimise business risk.

Methodology and assumptions

The assumptions made in regard to the data in Table 8.2 are as follows:

- Average number of trees per urban and CBD vegetation maintenance span?

  Average = total number of trees identified for trimming in urban areas divided by the total number of maintained spans in urban areas.

- Average number of trees per rural vegetation maintenance span?

  Average = total number of trees identified for trimming in rural areas divided by the total number of maintained spans in rural areas.

Average number of defects

Table 8.2 refers to the average number of defects in specific categories per maintenance span and the detail provided is the spans divided by the number of trees. The basis for using trees is because these have been fully scoped using the work flow management system AM4 and therefore are a more accurate count of the defect exposure.

A tree growing beneath a maintained span could have multiple non compliances with the Network standards for clearances to overhead conductors and the removal of single branch often removes multiple defects. The records of defects in the corporate Ellipse database are not consistently accurate and can contain duplications. It is considered the methodology employed to record the average number of defects is a more accurate reflection of the number of defects per maintenance span.

If Endeavour Energy were to use the lower quality actual defect numbers as requested we would expect to report a defect score of 0.15 and 0.4 for urban and rural maintenance spans respectively. The approach we have adopted in table 8.2 is outlined below.

- Average number of defects per urban and CBD vegetation maintenance span:

  Average = the total number of spans that have identified defects in urban areas divided by the total number of trees identified for trimming in urban areas. The defects do not include trees with defects identified for trimming in the future. It should be noted that by dividing one by the reported result, it converts the outcome to a per span figure.

- Average number of defects per rural vegetation maintenance span?

  Average = the total number of spans that have identified defects in rural areas divided by the total number of trees identified for trimming in rural areas. The defects do not include trees with defects identified for trimming in the future. It should be noted that by dividing one by the reported result, it converts the outcome to a per span figure.

- Standard vehicle access

  Access = Total length of Transmission and Distribution conductors in Kms in accordance with the AER definition.

- Variability.

  The number of defects identified in Urban, CBD and Rural vegetation maintenance spans have a natural variability each year dependent upon the climate effects of El Nino and La Nina.

- Vegetation Management Process.

  The process is characterised in work place instruction WMV-0838. The process describes in detail the methodology of the discrete contracts of work for Scope and Audit contract, Maintenance Cutting contracts and Auditing by Endeavour Energy staff of the cutting.

- The Tropical proportion is zero as Endeavour Energy does not have any network in an area zoned as Tropical by the Bureau of Meteorology.

Use of estimated information

Endeavour Energy has back cast the data for DOEF0201 for the 2009 to 2012 years by calculation based on the ratio of Rural proportion kilometres and total route length from table 8.3 for the 2013 Regulatory year. This assumes that the rural proportion is constant over the time period.

Endeavour Energy has back cast the data for DOEF0205 for the 2009 to 2012 years by calculation based on the average span length from the 2013 Regulatory year and assuming the average span

length does not change materially over the time period, applying the average to the total route length for the particular year.

Endeavour Energy has blacked out the responses for DOEF0202-04 and DOEF0208-14 in accordance with the RIN Instructions as Endeavour Energy does not currently measure the information in accordance with the variable requirement, it would be unnecessarily burdensome to estimate and it is illogical to enter '0'.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 8.2.

Reliability of information

The information provided for the 2013 regulatory year is from the various Endeavour Energy systems as detailed above. The information provided for DOEF0202 and DOEF0205 has been calculated using the methodology and assumptions outlined above.

8.3 Service area factors

Compliance with requirements of the notice

The data presented in table 8.3 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Current geospatial data was used to determine current circuit length (excluding service conductors) and route line length (using a complex geospatial query). The ratio of Route Line to Circuit Line lengths was then used with data from 6. Physical Assets, items DPA01 and DPA02 to estimate route line length for respective years.

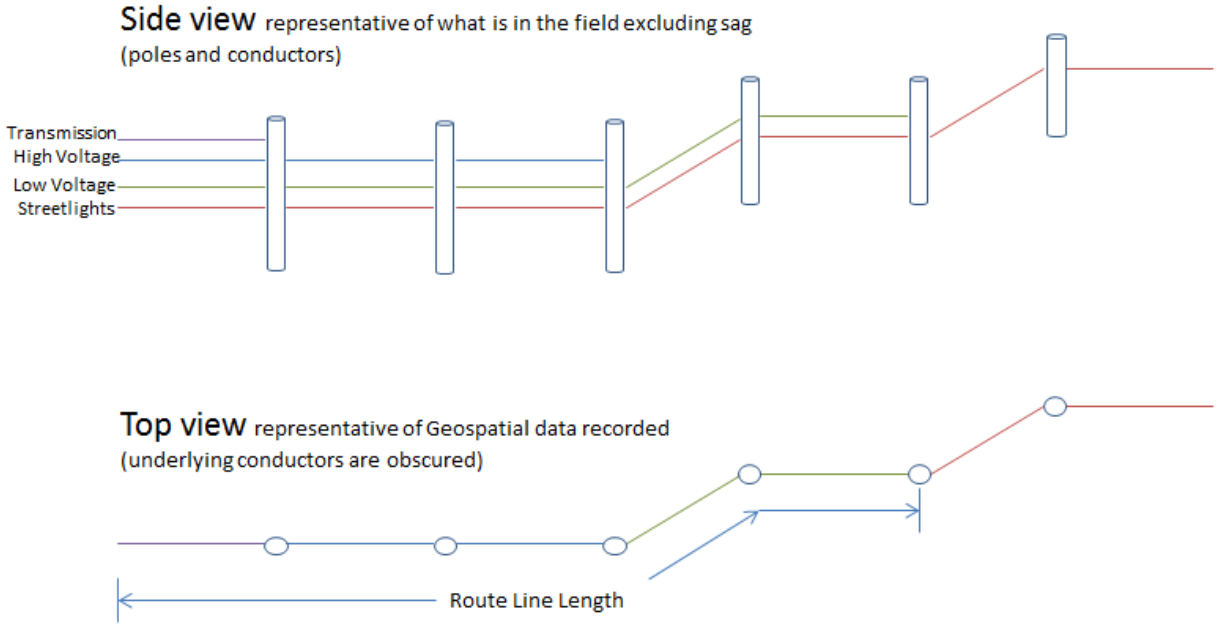
Methodology and assumptions

It is assumed the ratio of route line to circuit line length has been constant over time, back to financial year 2005/06.

Use of estimated information

Endeavour Energy has used estimated information for route line length. An estimate was required as historical figures have not been reported and Endeavour Energy's GIS systems do not have audit trails or historical data readily available for this purpose.

A complex geospatial query was used to determine route line length. The below diagram outlines how the query relates to assets in the field, including a comparison to how it is visually recorded as data (or layers) in Endeavour's geospatial database. The spatial query reported conductor route length once, regardless of whether there were multiple layers (Transmission, High and Low voltage) or a single layer.



Route Line Length effectively based on single route length as shown by the top view (excluding service lines to customers, public lighting, communication and similar service or pilot lines). Endeavours' geospatial system captures overhead lines as point to point data and does not include components such as sag, etc.

Circuit total lengths are available from historical records of reports. The method used considered (using Overhead conductor data):

a) current Circuit Total Length (including Streetlights) 28,278.58km
b) current Streetlight only Total Circuit Length 5,297.93km
c) current Route Line Total Length (excluding Streetlights) 18,016.66km

A ratio was then determined as c) / [(a – b)] or 18,016.66 / (28,278.58 – 5,297.93) giving 76.71% as the ratio of total route length to total circuit length, excluding streetlights for both. This ratio was also used to estimate both Overhead and Underground route line lengths for each year from total circuit lengths (Tables 6.1.1 and 6.1.2, DPA01 and DPA02).

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the table in this section.

Reliability of information

All information provided represents estimated information as the data for table 8.3 is not readily available in historical data, audit records, or captured.

8.4 Weather stations

Compliance with requirements of the notice

The data presented in section 8.4 is consistent with the requirements of the Economic Benchmarking RIN. In particular, the weather station data in this section is compliant with the regulatory requirements of the reports as it makes use of trusted data with Endeavour Energy as well as a comprehensive database of weather stations as generated by the Bureau of Meteorology.

Source of information

Endeavour Energy network map
Weather station database – http://www.bom.gov.au/climate/data/lists_by_element/alphaNSW_36.txt

Methodology and assumptions

Google Maps overlay of network boundary/service area was used to identify where the Bureau's weather station sites were situated and to classify them as falling under Endeavour Energy's region. A weather station is assumed to be active if it has provided a weather measurement in the past year. The list provided excludes all weather stations that have not actively provided data in the last 12 months.

Use of estimated information

No estimated figures were used for this section

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in this section.

Reliability of information

Data relating to weather stations within our network included in this section are based on actual data, making the information provided reliable.